



PAL



GRAN TURISMO™

THE REAL DRIVING SIMULATOR



PlayStation™

Precautions

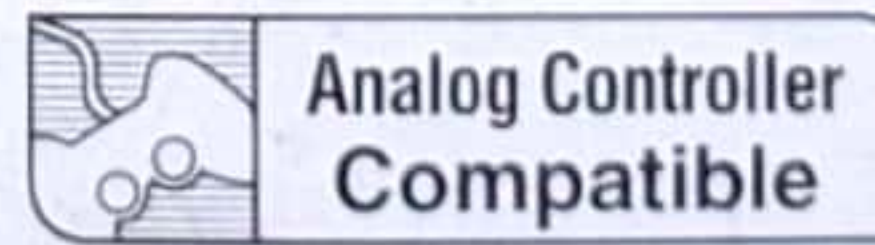
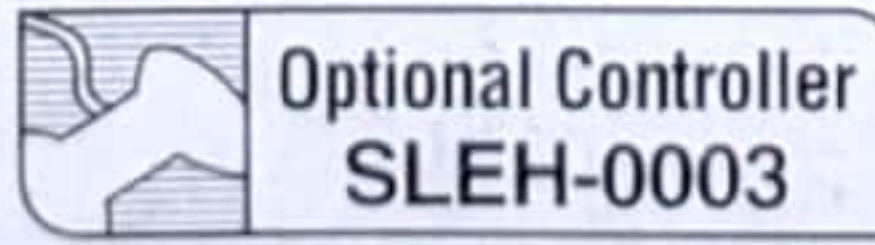
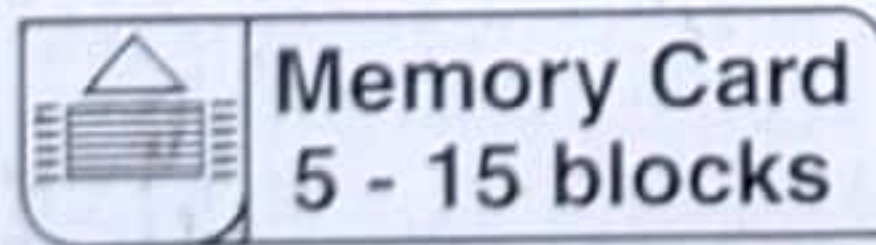
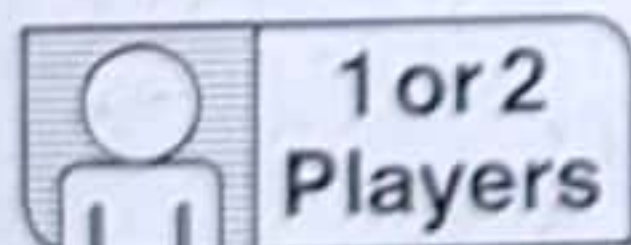
- This disc contains software for the PlayStation® home video game console. Never use this disc on any other machine, as it could damage it.
- This disc conforms to PlayStation® specifications for the European market only. It cannot be used on foreign-specification versions of PlayStation®.
- Read the PlayStation® Instruction Manual carefully to ensure correct usage.
- When inserting this disc in the PlayStation®, always place it label side up.
- When handling the disc, do not touch the surface. Hold it by the edge.
- Keep the disc clean and free of scratches. Should the surface become dirty, wipe it gently with a soft cloth.
- Do not leave the disc near heat sources or in direct sunlight or excessive moisture.
- Never attempt to use a cracked or warped disc, or one that has been repaired with adhesives, as this could lead to operating errors.

Health Warning

For your health, rest about 15 minutes for each hour of play. Avoid playing when tired or suffering from lack of sleep. Always play in a brightly lighted room, and stay as far from the television screen as possible. Some people experience epileptic seizures when viewing flashing lights or patterns in our daily environment. These persons may experience seizures while watching TV pictures or playing video games. Even players who have never had any seizures may nonetheless have an undetected epileptic condition. Consult your doctor before playing video games if you have an epileptic condition or immediately should you experience any of the following symptoms during play: dizziness, altered vision, muscle twitching, other involuntary movements, loss of awareness of your surroundings, mental confusion, and / or convulsions.

See back page of this manual for Customer Service Nos. and **POWERLINE** Nos.

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DUAL SHOCK

E n g l i s h

GRAN TURISMOTM

THE REAL DRIVING SIMULATOR

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SETTING UP

Set up your PlayStation® according to the instructions in its Instruction Manual. Insert the GRAN TURISMO™ disc and close the Disc cover. Turn the PlayStation® ON at the POWER button. **It is advised that you do not insert or remove peripherals or Memory cards once the power is turned on.** Make sure there are enough free blocks on your Memory card before commencing play.

SELECTING A LANGUAGE

Use the Directional buttons to highlight your language and press the X button to select the language and advance to the Main Menu. PLEASE NOTE: It is not possible to change your language in-game after this point.

MAIN MENU

SELECTING THE MODE AND MENU

MAIN MENU

After the Start-up sequence, the Main Menu appears. The Main Menu is where you select from two different race modes, and where you can select the replay and setting menus.



QUICK ARCADE	A fast, accessible yet authentic racing game
GRAN TURISMO	Immerse yourself in a completely realistic racing experience
REPLAY THEATER	Play and manage your replay data
OPTION	Alter the game's various settings

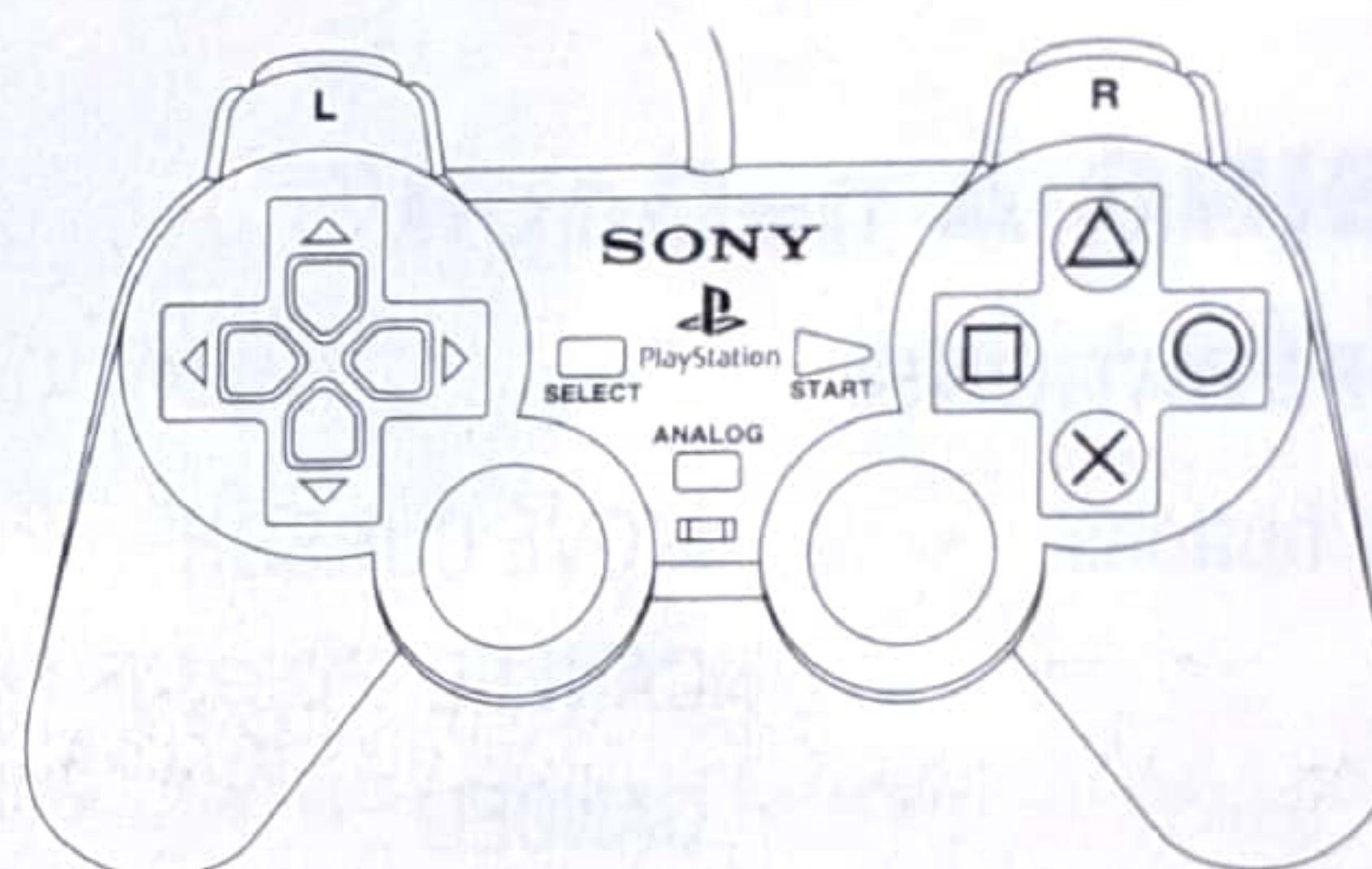
HOW TO PLAY GRAN TURISMO™

i) USING AN ANALOG CONTROLLER (DUAL SHOCK)

The Analog Controller (DUAL SHOCK) offers superb analog handling and control whilst boasting the additional feature of a double-frequency vibration mechanism, bringing an added level of realism to the most accurate racing simulation ever.

MENU OPERATIONS

Directional buttons	MOVE CURSOR
□ button	CANCEL
△ button	CANCEL
○ button	SELECT / CONFIRM
× button	SELECT / CONFIRM



RACING OPERATIONS

Before commencing a race, select the ANALOG mode on the Analog Controller (DUAL SHOCK) - the LED will light up RED:

L1 button	REAR VIEW	○ button	HAND-BRAKE
L2 button	SHIFT DOWN	× button	ACCELERATE
R2 button	SHIFT UP	□ button	BRAKE
R1 button	CHANGE VIEW	START button	PAUSE
△ button	REVERSE	Left stick	STEER

• The configurations above are the default settings, and can be changed on the OPTION menu.

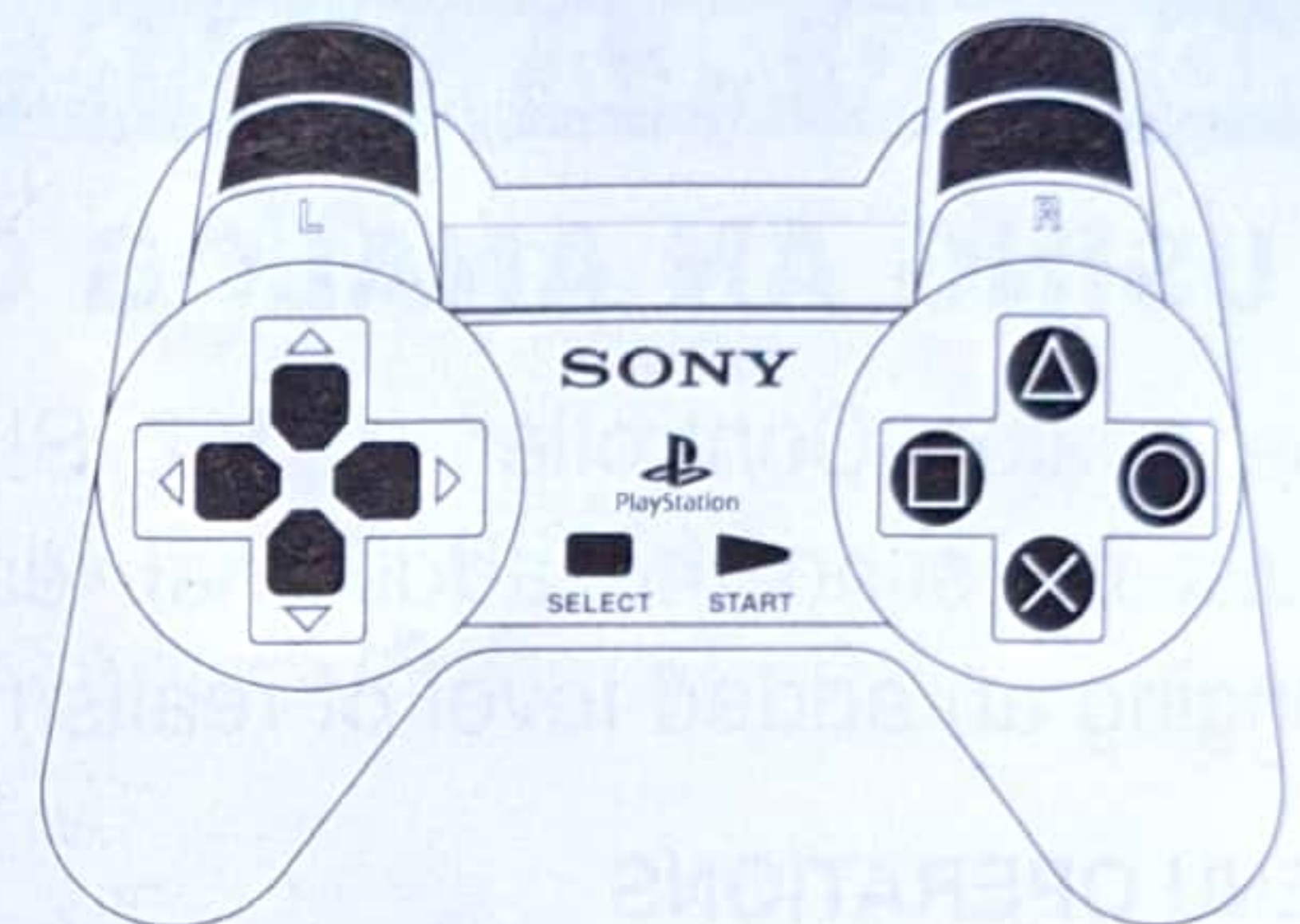
• To unpause the game, select CONTINUE from the Pause menu.

• To end the race from the Pause menu, select GAME END.

ii) USING A CONTROLLER

GRAN TURISMO™ can also be played using a Controller (digital). All operations are identical to those of the Analog Controller (DUAL SHOCK), except for steering when in a race:

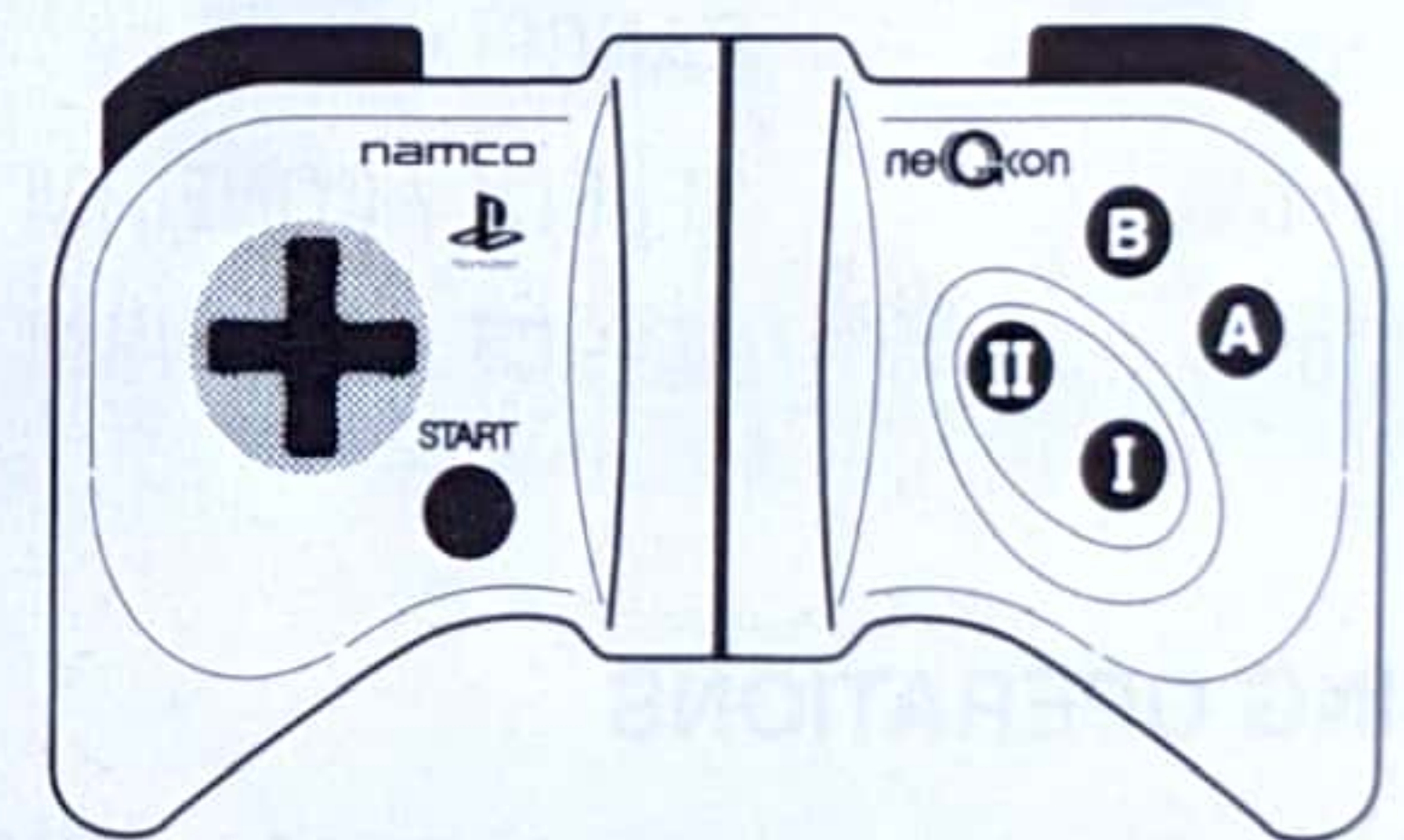
Directional buttons STEER



iii) USING A neGcon™

MENU OPERATIONS

Directional buttons	MOVE CURSOR
II button	CANCEL
B button	CANCEL
A button	SELECT / CONFIRM
I button	SELECT / CONFIRM



RACING OPERATIONS

UP Directional button	SHIFT UP	B button	REVERSE
DOWN Directional button	SHIFT DOWN	A button	HAND-BRAKE
L button	REAR VIEW	I button	ACCELERATE
Twist	STEER	II button	BRAKE
R button	CHANGE VIEW	START button	PAUSE

NOTE: For operating instructions, refer to the instruction manual supplied with your neGcon™. The configuration above are the default settings, and can be changed on the OPTION menu.

THE RACE SCREEN

POSITION

LAP NUMBER / TOTAL LAPS

TOTAL TIME

LAP TIME

COURSE MAP



REAR VIEW MIRROR

COURSE RECORD

BEST LAP

TACHOMETER

CURRENT GEAR

SPEEDOMETER

NOTES: The rear view mirror is only available in DRIVER view. On the course map, your position is indicated in red, and your opponents' positions are indicated in green. The screen composition may vary slightly according to the type of race.

REPLAY MODE

THE REPLAY SCREEN

By playing replay data, you can view race replays any time you wish. While replaying, you can change the view or the car being tracked. Use this feature to analyse your own racing style objectively and compare it to other drivers.

REPLAY OPERATIONS: CONTROLLER / ANALOG CONTROLLER (DUAL SHOCK)

UP/DOWN Directional buttons CHANGE CAR BEING TRACKED

START button

END REPLAY

△ button

○ button

× button

□ button

CHANGE VIEW

CHANGE VIEW

CHANGE VIEW

CHANGE VIEW

REPLAY OPERATIONS: neGcon™

UP/DOWN Directional buttons		CHANGE CAR BEING TRACKED	
B button	ALTER VIEWPOINT	I button	ALTER VIEWPOINT
A button	ALTER VIEWPOINT	II button	ALTER VIEWPOINT
START button	END REPLAY		

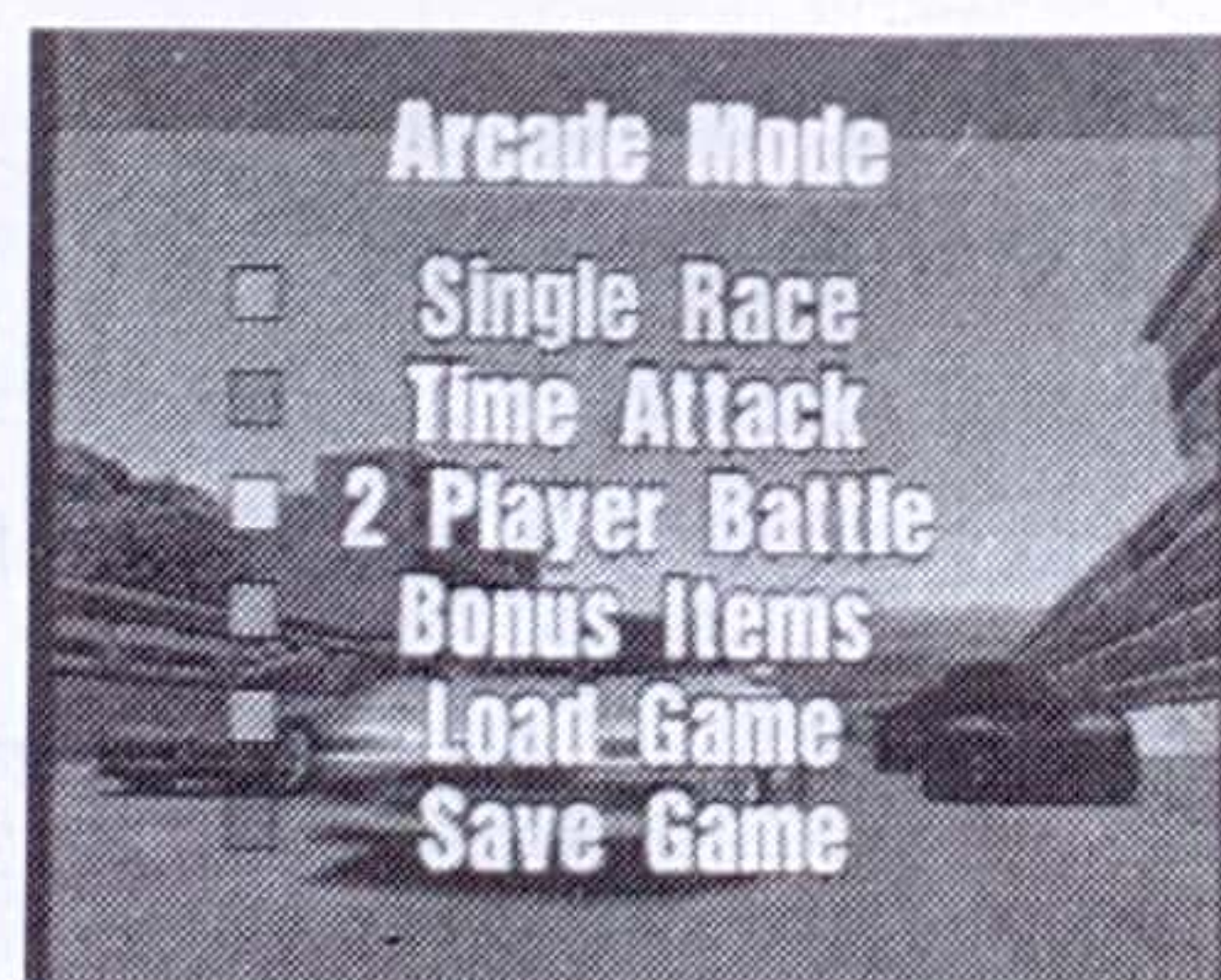
THE QUICK ARCADE MODE:

THE FLOW OF GAMEPLAY

To get you started, there now follows a step-by-step guide to playing a variety of races in GRAN TURISMO™. We'll start with the QUICK ARCADE mode. Select QUICK ARCADE from the Main Menu:

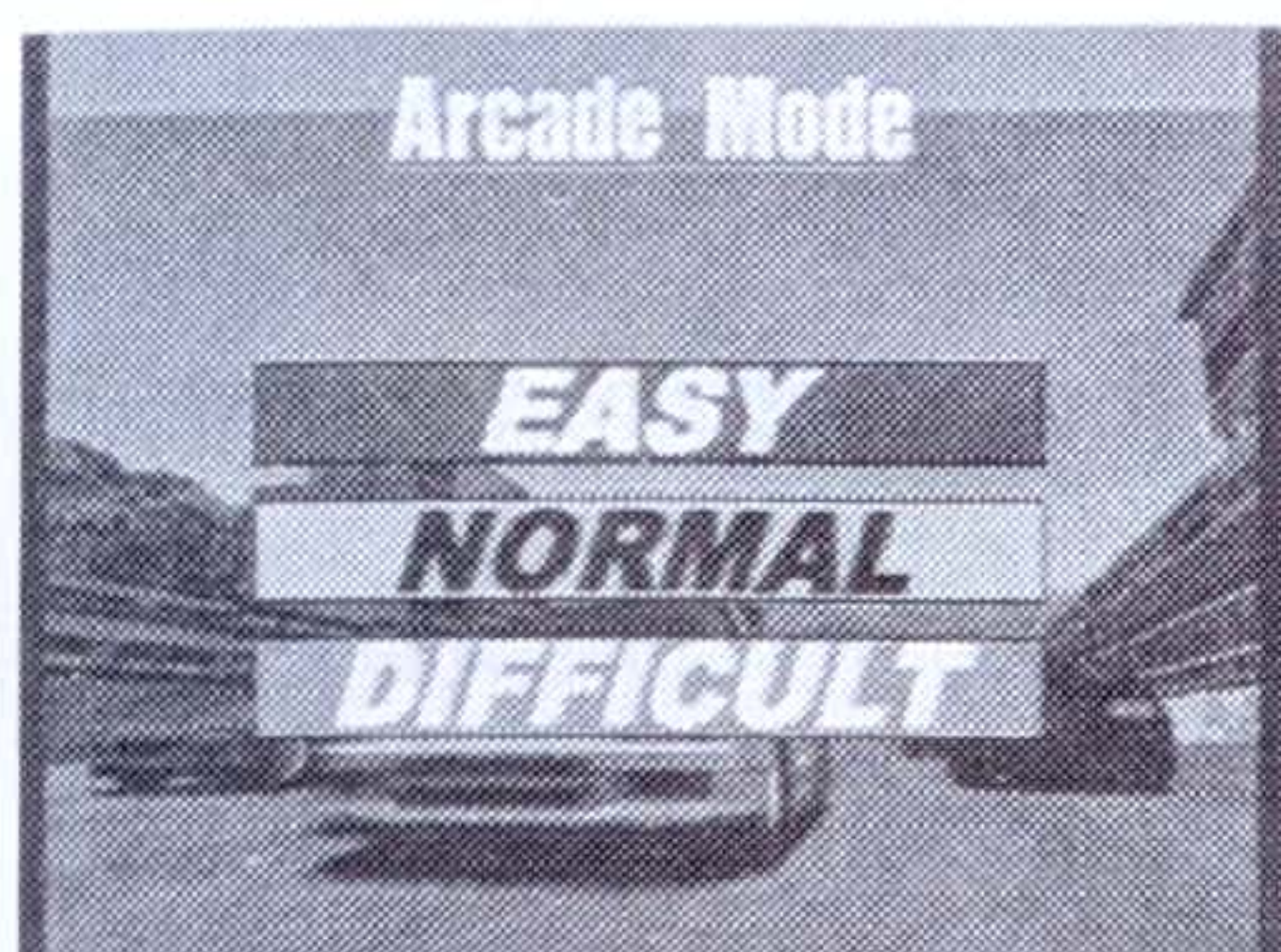
SELECT YOUR RACE MODE

On the QUICK ARCADE menu, you can choose from three different racing modes plus three other sub-menus. Use the UP/DOWN Directional buttons to highlight an option and the X button to select it.



SINGLE RACE
TIME TRIAL
2 PLAYER BATTLE
BONUS ITEMS
LOAD GAME
SAVE GAME

Here, the SINGLE RACE mode is used as an example to explain the flow of gameplay in the QUICK ARCADE mode. For more information, see the individual sections on each option later on in this manual.



SELECT YOUR DIFFICULTY LEVEL

Select the level of difficulty for the race – choose between EASY, NORMAL and DIFFICULT. When playing for the first time, try the EASY beginner's level. Now you need to select the car you want.



CHOOSE A CAR DEALERSHIP (MANUFACTURER)

Use the UP/DOWN Directional buttons to highlight a dealership and press the X button to choose the one you want.

CHOOSE YOUR CAR MODEL

Horsepower

Drive system

Class



Performance graph:

(MAX SPEED

ACCELERATION

HANDLING)

Once you select the car to you wish to drive, cars of similar rank are automatically selected as the rival cars that you will race against. The performance graph uses a five-level rating system to rate three aspects of car performance: Max Speed, Acceleration, and Handling.

SELECT THE DRIVING STYLE

Select the driving style for your car. When racing to achieve the fastest time possible, select STANDARD. For flashier driving, select DRIFT. Press the X button to make your selection:

STANDARD Racing-oriented settings.

DRIFT Drift-orientated settings

SELECT THE GEAR TYPE

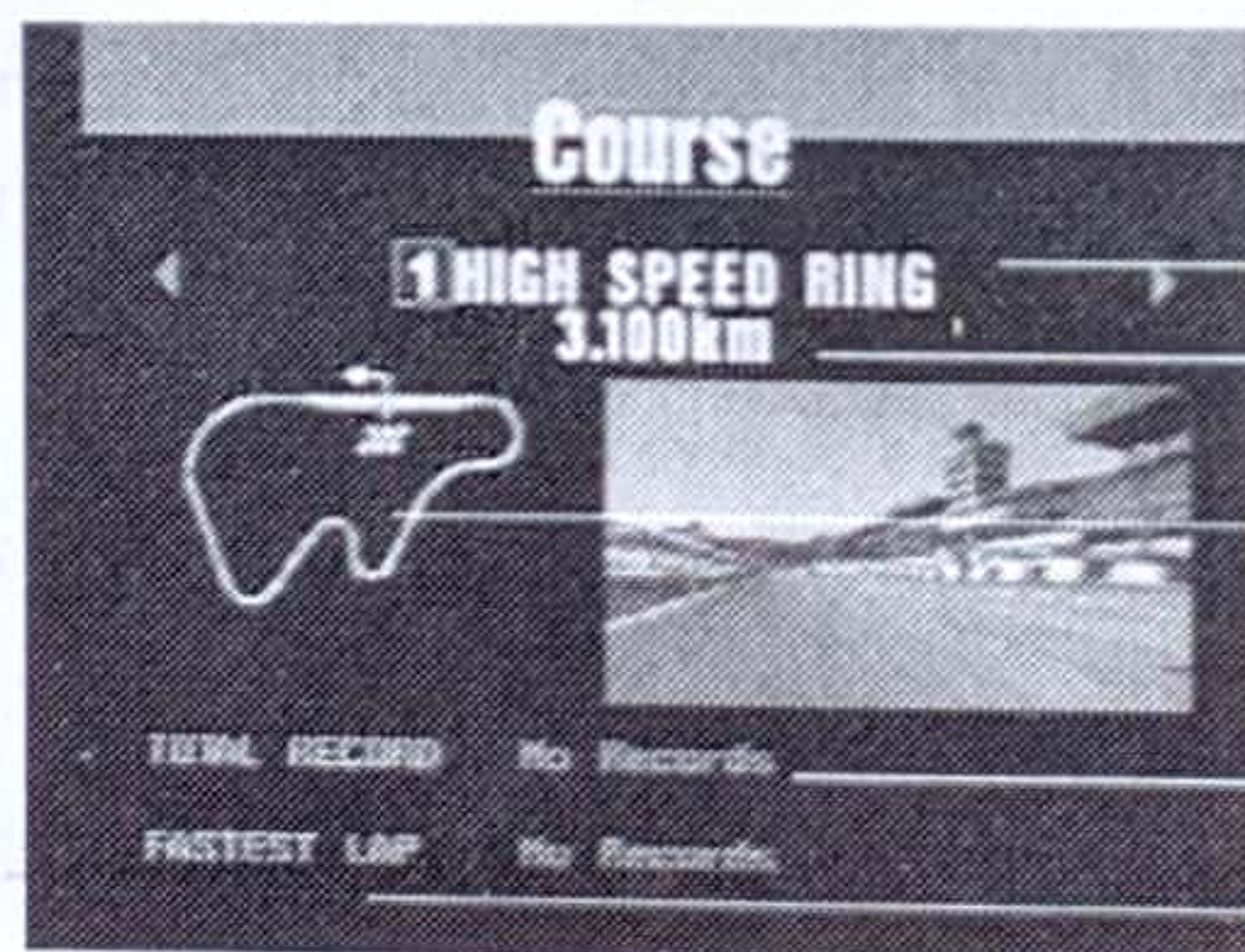
Here, indicate the type of transmission you want:

AT Automatic transmission

MT Manual transmission

COURSE SELECTION

Use the LEFT/RIGHT Directional buttons to select the course you wish to race on and press the X button to confirm the selection:



Course name

Total length

Course map

Preview movie

Total Record

Fastest lap

You're now ready to race!

RACING

This is a two-lap race against five rival cars. You automatically start this race in the last position each time and the race ends as soon as two laps are completed.

RACE OVER - VIEWING RESULTS

When your car crosses the finish line, the race results appear.



Result	
1 SUPRA-RZ	1:53:154
2 IMPREZA STi TypeR	+0:081"
3 FORX7 Aspec	+0:213"
4 NSX-90	+0:221"
5 R33GT-R	+0:381"
6 GTO twinturbo	+0:783"

note: rank refers to your car's placing (1-6)

Winning time

Difference from winning time

Car model

Rank

REPLAY

The most recent race is replayed. The replay can be stopped by pressing the START button.

SETTING A NEW RECORD

When the record time or the best lap time is broken, then the NEW RECORD screen appears.



You Set The New Record!	
SUPRA RZ HIGH SPEED RACING	
Ranking	1st
Total Time	1:53:154 New Record!
Lap Time	
Lap 1	1:00:436
Lap 2	0:52:718 New Record!

NEW RECORD indicates this record-breaking time.

Total time

Individual lap times

ENTER YOUR NAME

Enter your name by moving the cursor to each letter or character one at a time. Select END to finish.

To check the record for each course, go to Course Selection.



AFTER THE RACE

POST RACE MENU

This menu appears after the end of each race. To return to the QUICK ARCADE menu, select the Exit icon.



REPLAY	The most recent race is replayed.
TRY AGAIN	Run the same race again under the same settings and conditions.
STARTING LINE-UP	Shows all cars running in the current race.
SAVE REPLAY	Saves the replay data for the current race.
Exit icon	Return to the QUICK ARCADE menu

MODES AND MENUS

TIME TRIAL

In the TIME TRIAL mode, your car races around the course alone, the objective being to achieve the fastest lap time possible. As in the SINGLE RACE mode, begin by selecting your car and course. When the pre-race menu appears, select START to begin the race.

START	Start TIME TRIAL race
LOAD GHOST REPLAY	Loads ghost data
Exit icon	Returns you to the QUICK ARCADE menu

GHOST CARS

A ghost car is a rival car that is transferred onto the course from replay data. When replay data is loaded to generate ghost cars, they will race against you in the TIME TRIAL mode as solid incorporeal rival cars that pass through your car without impacting against it.

Only replay data from a race run in the TIME TRIAL mode and on the same course as the one you have selected can be used to generate ghosts.

In TIME TRIAL mode, if you press the START button, the game will pause and bring up the Pause menu, where you will be able to select the GHOST CAR ON/OFF option. During a race, peripherals which have a SELECT button can use it to toggle the Ghost car on and off – peripherals without a SELECT button e.g. neGcon should use the Pause Menu to switch the Ghost car on and off.

2 PLAYER BATTLE

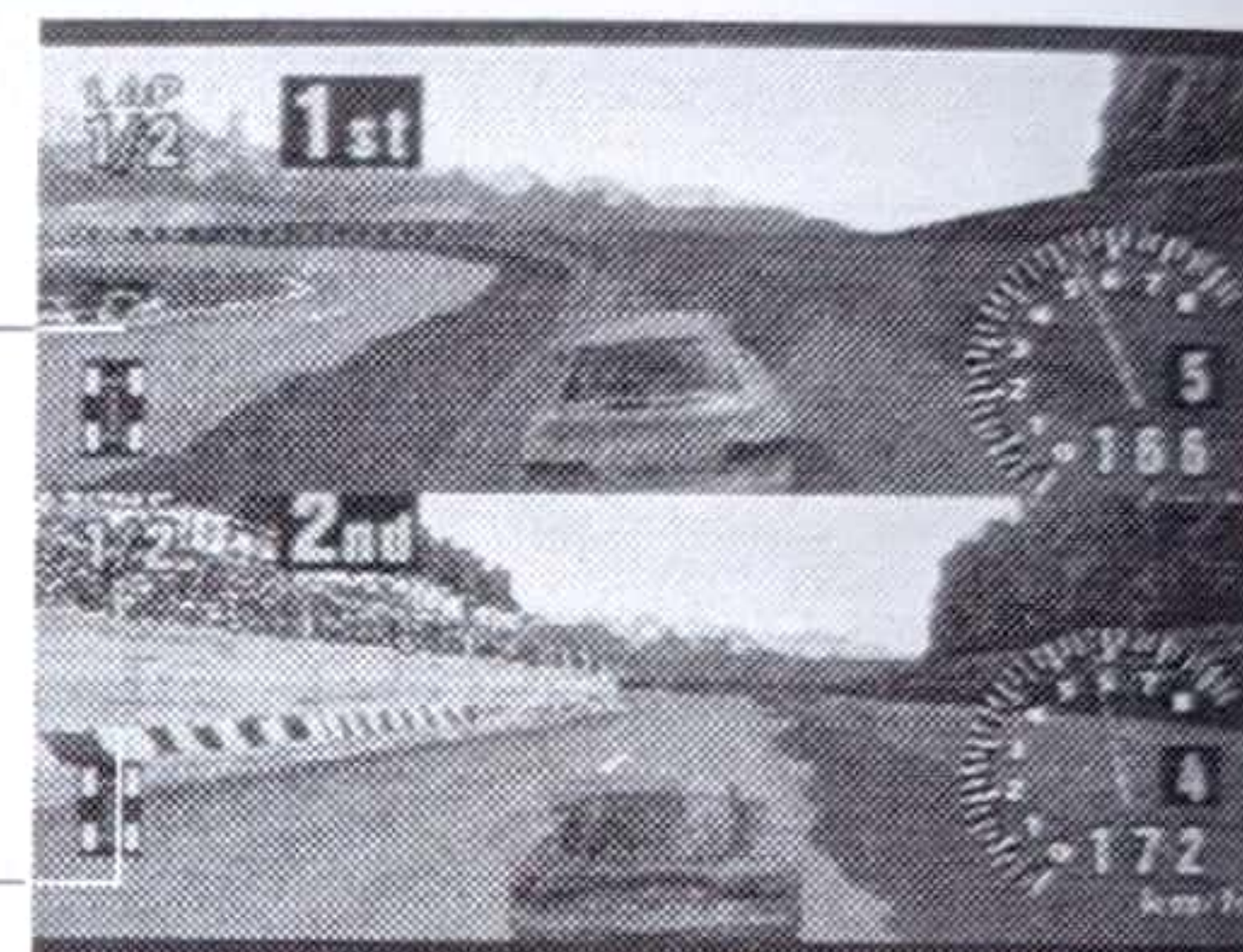
In this mode, two players race against each other, each using a separate Controller. Players select their respective cars on a split screen that is divided horizontally. After each selection is entered, Player 1 selects the course and the race begins.

RACE SCREEN

The race takes place on a horizontally split screen. Each player can change the view independently of the other player, but the rear-view mirror does not appear in either view.

Player 1

Player 2



BONUS ITEMS

This lets you check on how much of each course you have cleared in the SINGLE RACE mode.

When you come in 1st place in a race, a colour-coded mark appears above the rank of the car used to indicate the level of difficulty. Select CANCEL to return to the QUICK ARCADE menu.

Level of difficulty

Rank of car used

Course

As each course is cleared under the various conditions, the areas under the question marks (?) are revealed one by one.

Acquired Items			
Easy Normal Difficult			
ABC High Speed Ring	ABC Trial Mountain	ABC Grand Valley East	ABC Custom Stage 3
?	?	?	?
	?		
	?		
	?		

LOAD GAME/SAVE GAME

Caution: Do not remove the Memory card while an operation on this menu is in progress. Doing so may result in the loss of data on the Memory card or cause the game to malfunction. It is advised that you do not insert or remove Memory cards once the power is turned on. Make sure there are enough free blocks on your Memory card before commencing play.

It is possible to load and save game data. Note that loading or saving game data will change all OPTION settings, and all data in the QUICK ARCADE mode and the GRAN TURISMO mode to the settings that were originally saved onto the Memory card.

LOAD GAME/SAVE GAME: THE FLOW OF OPERATIONS

Select the Memory card slot you wish to access. The contents of the Memory card in that Memory card slot are displayed. To load data from or save data to this Memory card, select YES. To cancel without loading or saving data, press the Δ button.

Game data for the OPTION settings, QUICK ARCADE mode and GRAN TURISMO mode are all written to a single game data file occupying 5 Memory card blocks, and only one game data file can be stored on a single Memory card.

THE GRAN TURISMO MODE

The GRAN TURISMO mode allows you to experience the realism and thrill of authentic auto racing. Savour the joy of winning a race in a car customised by you to your own specifications.

STARTING THE GAME

From the Main Menu, select GRAN TURISMO to bring up the map screen. Scattered across the map, surrounding the player's HOME, are dealerships, each carrying a list of models for that individual car manufacturer. Click the appropriate icon and step into the world of GRAN TURISMO.

RESUMING PLAY

If you have stored data from a previous GRAN TURISMO mode race onto a Memory card, you can resume play where you left off. Simply use the Directional buttons to highlight HOME on the map screen and press the X button to enter, then select the LOAD&SAVE icon from the next menu. Pick LOAD, then use the LEFT or RIGHT Directional buttons to highlight the Memory card you wish to load from (MEMORY CARD 1 or MEMORY CARD 2).

MAP MENU

The Map Menu lets you move to any of the various menus shown just by using the Directional buttons to highlight the icon for that menu and pressing the X button to select.

The category of each menu is indicated by its icon. Select the Exit icon (the picture of a door) to return to the Main Menu.



CREDITS: You begin a new game with 10,000 credits (Cr). Start out by looking for a used car that you can afford with this number of credits. After each race, drivers are awarded prize money commensurate with their performance. This prize money can be saved up to buy parts and other cars.

NUMBER OF DAYS ELAPSED: One day elapses each time you take a license test or run in a race (A qualifying race and the subsequent final race are together counted as one day).

GRAN TURISMO: THE FLOW OF GAMEPLAY

For features not described in this section, see the MENUS: A QUICK SUMMARY section later on in this manual.

In the GRAN TURISMO mode, the objective is to collect prize money by winning races and then use that prize money to upgrade to better, faster cars in order to win the more advanced races.

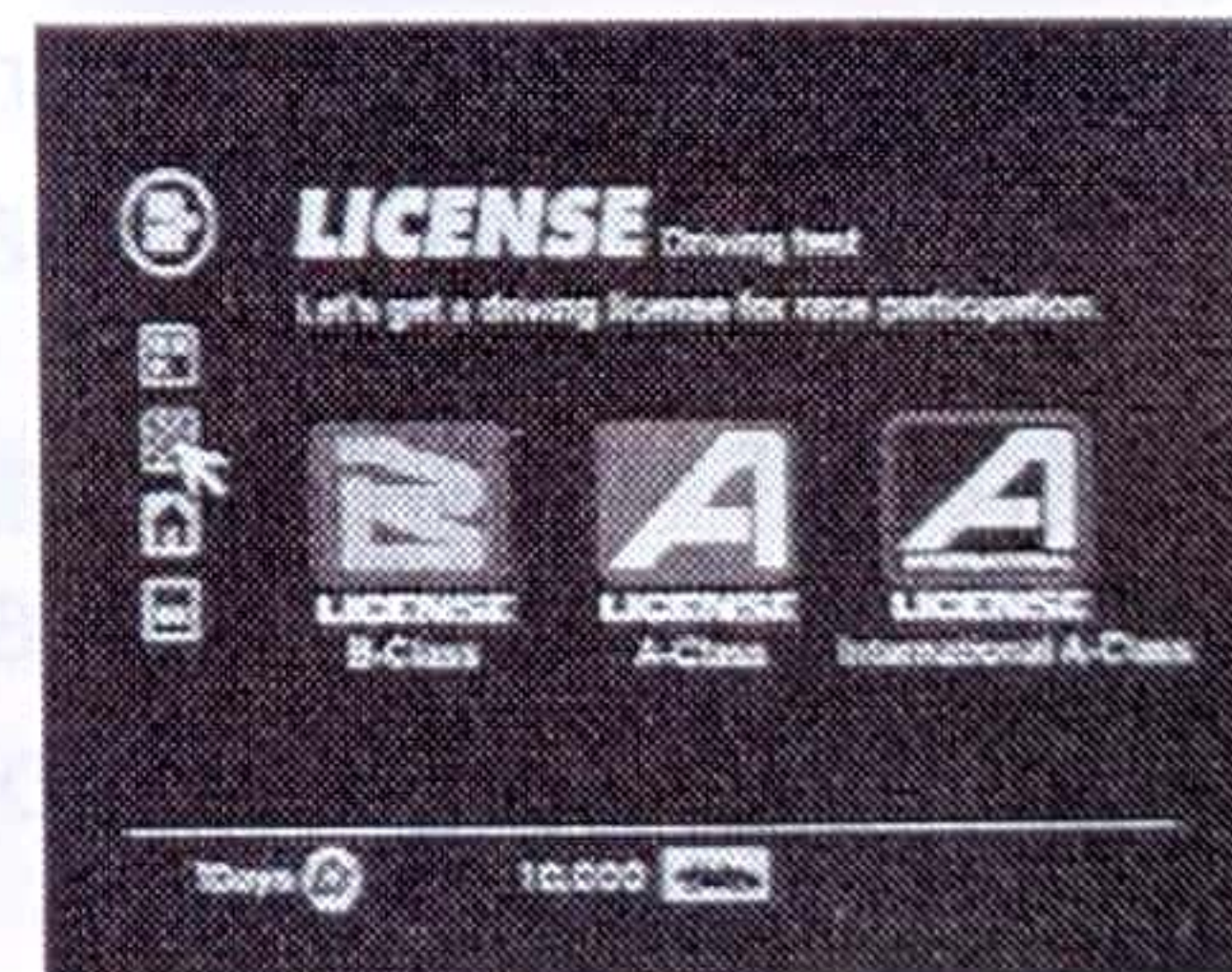
Here, a tutorial describes the flow of gameplay in the GRAN TURISMO mode.

i) PURCHASING A CAR

You must purchase a car in order to race. Because of the low number of credits you start with, begin by looking at a USED CAR. Of course, once your financial standing improves, you can start buying new cars.

GETTING A LICENSE

A racing license is needed to enter most races. Upon taking and passing the predetermined test, you will be presented with a license. See below for more details.



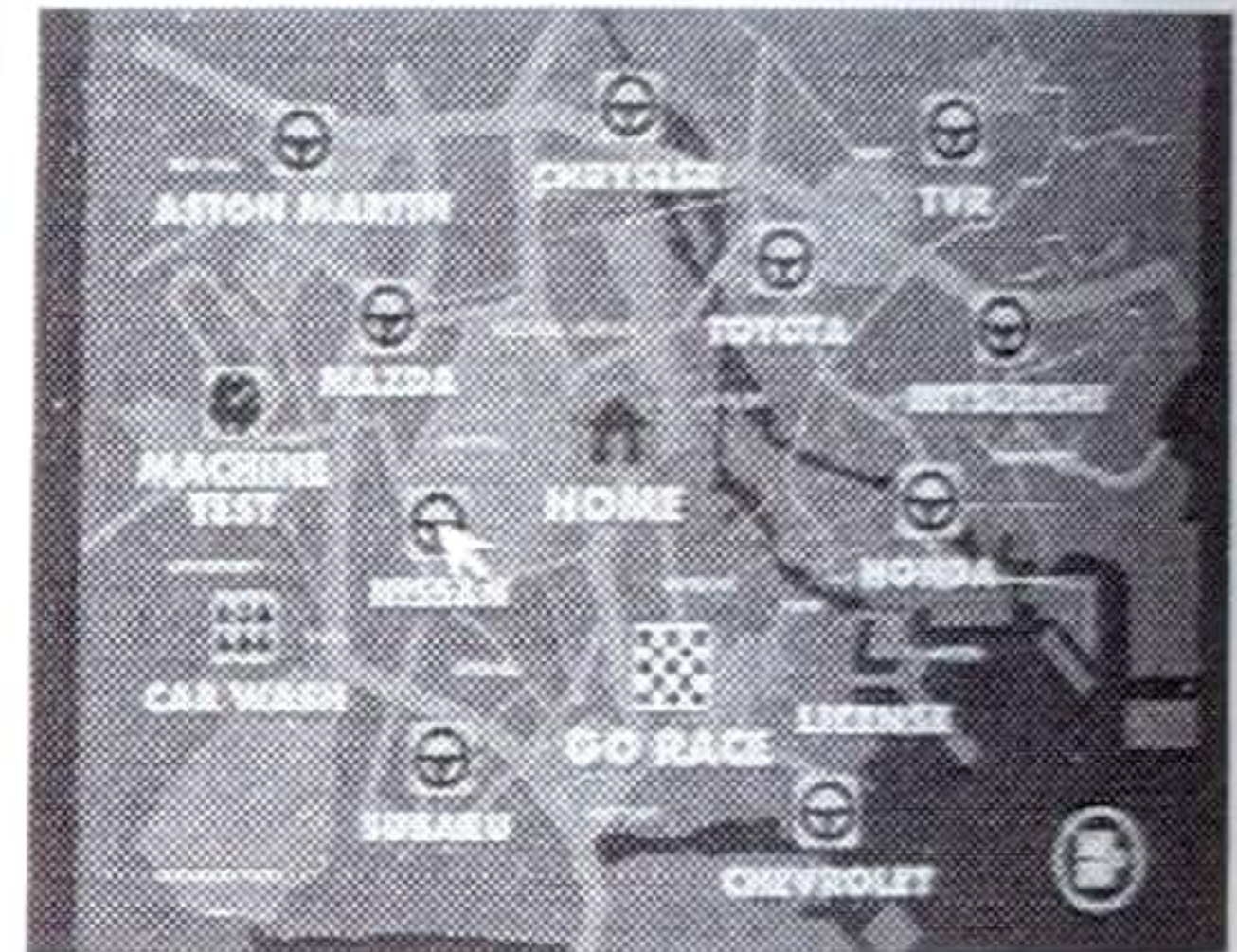
iii) RACING

The races are divided into different skill levels and different types of cars. The more difficult the race, the higher the prize money, so the objective is keep moving up to harder and harder races.



i) BUYING A CAR

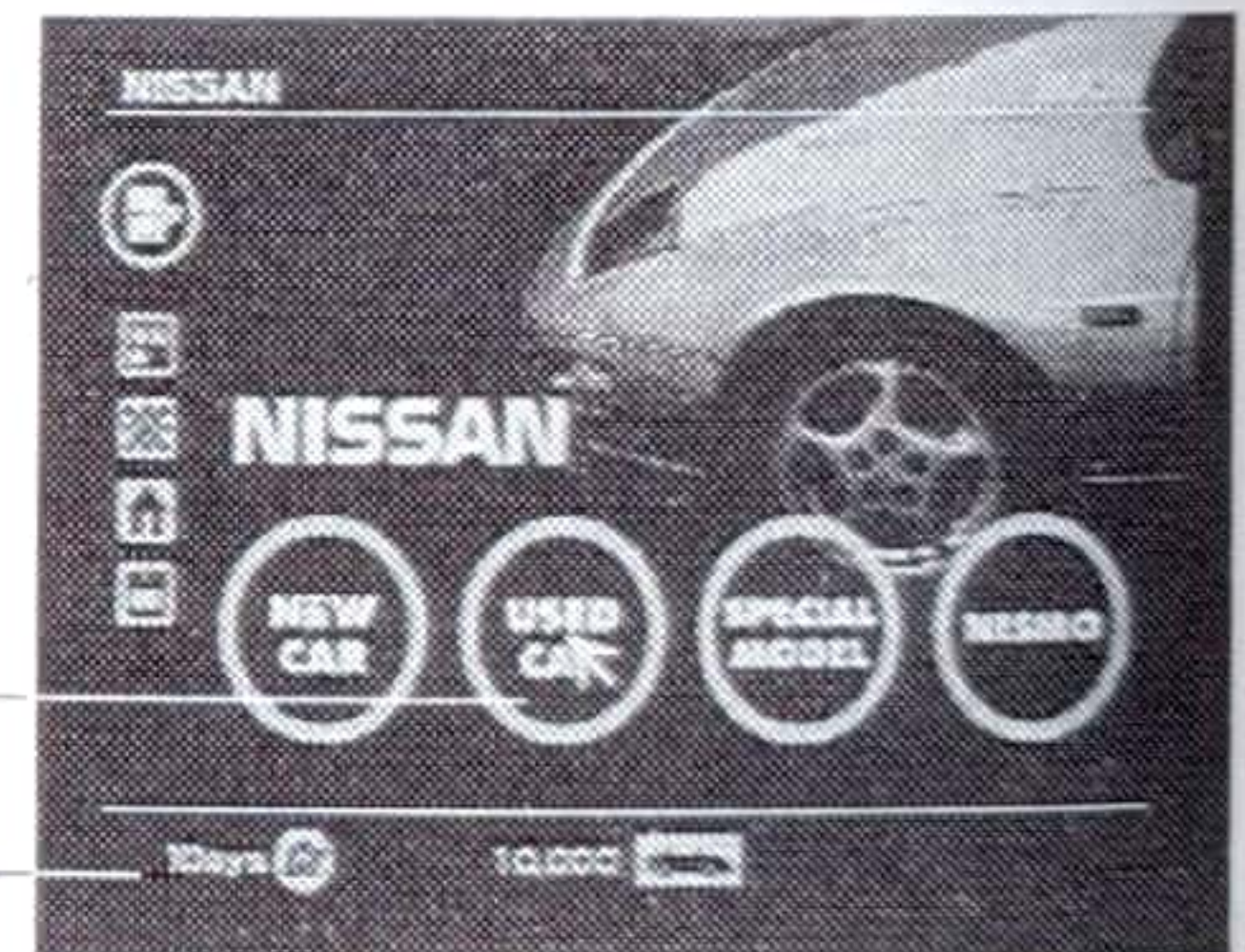
You'll have to buy a car in order to race. Use the Directional buttons to move the cursor to the dealership you want. For this tutorial we'll choose NISSAN.



DEALERSHIP'S MENU

Because of the small number of credits you start out with, you will only be able to afford a used car.

CHOOSE USED CAR
CREDITS



SELECTING A CAR TO BUY

On the USED CAR screen, you can also sell your car. Since you need to buy a car at this point, select BUY.

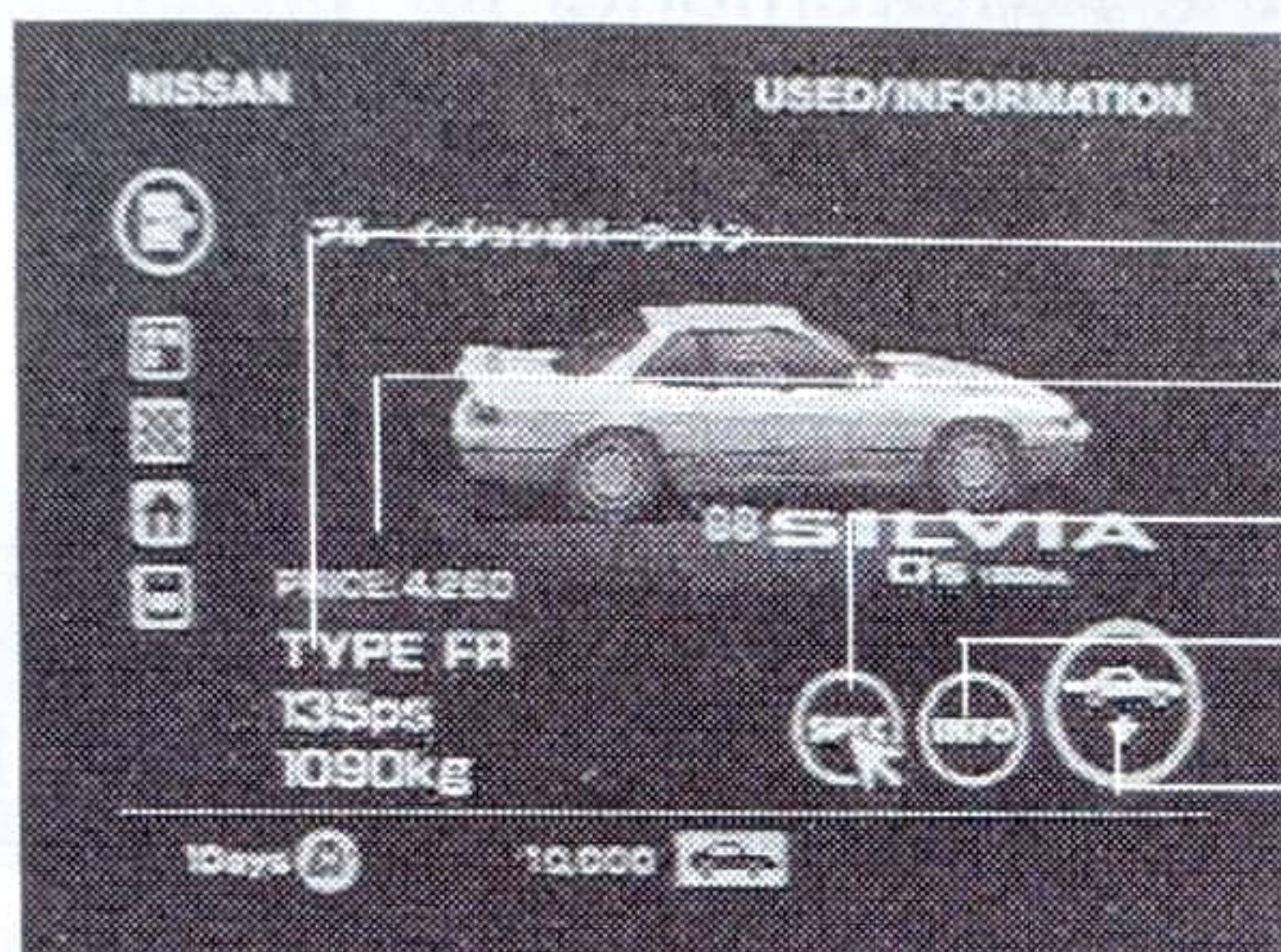
After you select BUY, a list of all currently available car models appears. To select the car you want to buy, move the cursor up or down to highlight that car. To see how it's



done, let's buy the '88 Silvia (S13 Silvia '88 Q's 1800 cc).

Align the cursor and press the X button. As the inventory of used cars changes regularly, it's a good idea to check back here frequently.

Next, the car you have selected appears. Examine the SPEC and INFO screens and decide whether or not you want to purchase the car. To buy the car, highlight the BUY icon and press the X button.



Drive system/Horsepower/Car weight

PRICE:

SPEC: Shows the car's performance specifications

INFO: Gives detailed information about the car

Select BUY.

NOTE: Car colour cannot be changed when buying a used car.

ii) TAKING YOUR LICENSE

After purchasing a car, the next step is to obtain a racing license. All licenses are obtained on the LICENSE menu, reached via the Map menu. This is an overview of the general flow of operations for taking your license test, but for a more detailed explanation, please consult the LICENSE section in MENUS: A QUICK SUMMARY later on in this manual.

The three classes of licenses are CLASS B, CLASS A and CLASS A INTERNATIONAL, which must be obtained in this order. When obtaining a license for the first time, you must take the Class B license test.

TAKING A LICENSE TEST

A license test comprises 7 preliminary tests and 1 final test. Unless you take and pass the 7 preliminary tests (starting at the top of the Test List), you cannot take the final test, which is at the bottom of the Test List. When you select a test, a description of the test appears. The first test you can take is STARTING AND STOPPING 1.

ABOUT THE TEST DESCRIPTIONS

This screen gives the test instructions and the requirements for passing. Read the text carefully before taking the test. Once you select the type of transmission you want (AT or MT), the test begins. Press the X button to enter your selection.

- The preliminary tests do not have to be taken in the order in which they appear on the Test List, but taking them in this order will enable you to refine your driving skills.
- When taking a license test, you will use a car prepared especially for testing purposes.
- After taking the test, a cup commensurate with your test performance will appear in the column of tests from the Test List that you have passed.

Viewing the Test Results after passing a test

The results screen appears once the test is completed. There are three levels of passing performance. In ascending order, they are: BRONZE, SILVER and GOLD. In other words, GOLD is awarded to drivers who demonstrate the best possible performance on the test. To return to the post-test menu, press any button.

Viewing the Test Results after failing or retiring

After failing or retiring, press any button to proceed to the post-test menu, just as you would do after passing the test.

After Completing the License Test

To immediately take another test, bring up the screen for whichever license you wish to take and select TRY SESSION. Select Try Session # to take you to the next test.



REPLAY:	Replays the most recent test
TRY AGAIN:	To retake the most recent test
TRY SESSION:	To take the next test. Use the LEFT/RIGHT Directional buttons if you wish to change the test you want to take
SAVE REPLAY:	Saves the replay of the most recent test
RECORDS:	Displays the record times for each test
EXIT icon:	To return to the LICENSE menu

- You can also retake a license that you have already passed.
- Even if you fail a preliminary test, you can still take the next preliminary test (though you cannot take the final test until you've passed all the others).
- Selecting the Exit icon does not delete the pass status information.

iii) SELECTING THE TYPE OF RACE

After successfully obtaining a license, you are now ready to enter a race. Select GO RACE from the Map Menu.

Select the category of the race you wish to enter. As an example, let's enter a GT LEAGUE race.



GT LEAGUE

Select SUNDAY CUP, a race you can enter with the Class B license you have just obtained.

Required license _____
Select SUNDAY CUP. _____



SUNDAY CUP

Before the race, a brief description and the race regulations (entry qualifications) are shown. You can only enter a race if your license and car satisfy the regulations.

INFO: Gives a detailed description of the race. _____
Select ENTRY to begin the race. _____



THE RACING SEQUENCE

In a league competition, you run multiple races, and victory is determined by total ranking points.

The sequence of each race is as follows.

QUALIFY/FREE SESSION

Here, you lap the course freely and alone. Once you learn the course, it's a good idea to adjust your car's settings.

START QUALIFY

In this qualifying run, you run the course alone to try for the best time possible, as in the TIME TRIAL mode. Since your starting position in the final race is determined by your qualifying time, stay calm, concentrate and try for the fastest time possible.

TEST RUN

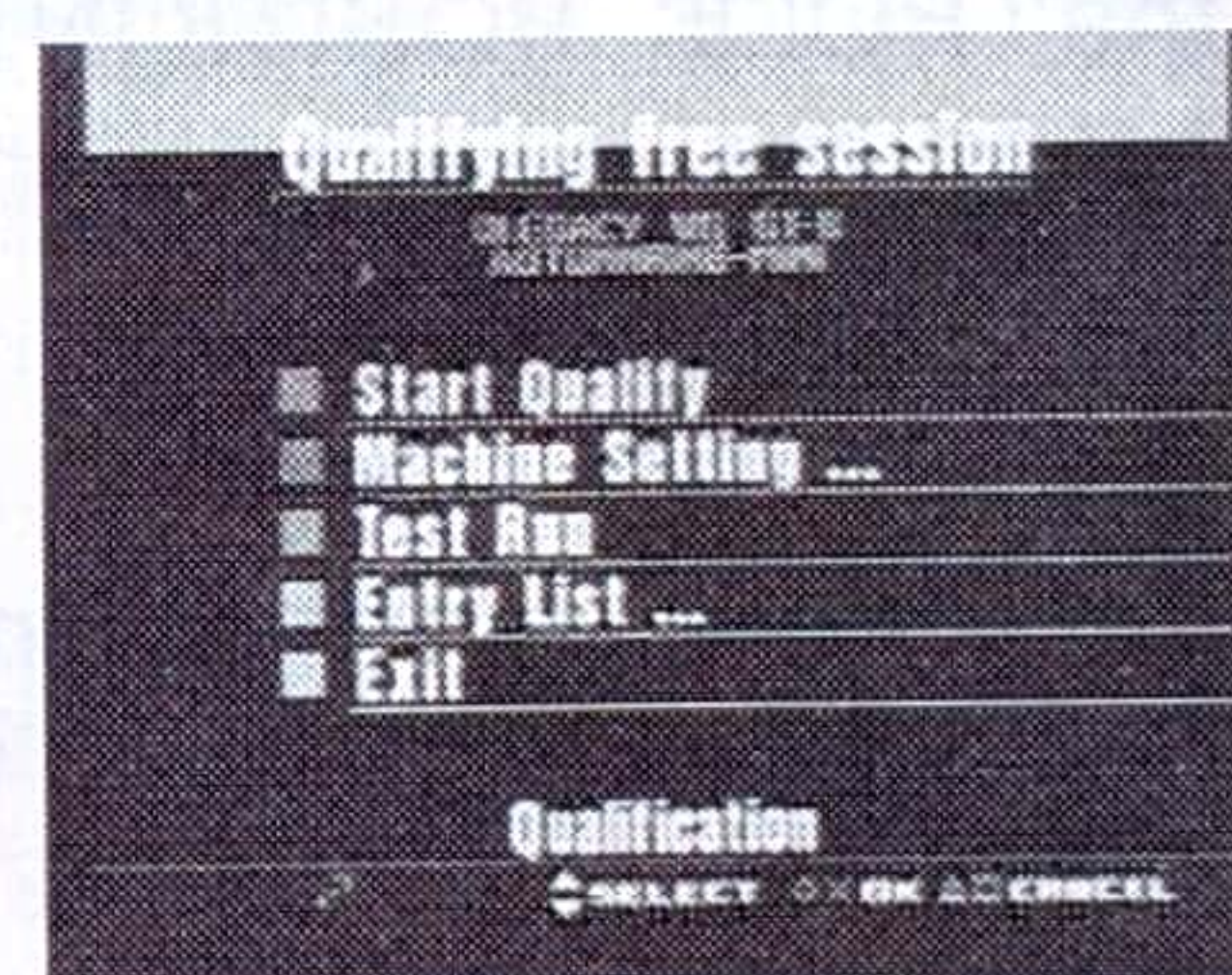
This is the last test run of the course before the final race. Take advantage of this opportunity by reviewing any mistakes you made during the qualifying runs and by changing to final race settings, for instance.

START RACE

At last it's time for the finals. Here you compete for 1st place with 5 rival cars.

QUALIFYING

Select TEST RUN to begin your test run, or Start Qualify to begin the qualifying run. To skip the qualifying process, select EXIT and then SKIP QUALIFY. When you skip the qualifying process, you start the finals in the last position.



Select Start Qualify


Your starting position in the finals is determined by your lap time in this 1-lap qualifying run. The faster your lap time, the closer to the front your starting position is. Qualifying ends as soon as one lap of the course is completed.

END OF QUALIFYING

During the test run, you can lap the course as many times as you wish until you decide to retire or go on to the qualifying runs.

VIEWING QUALIFYING RESULTS

This screen shows the qualifying results. Select NEXT to view a stats screen and from there onto the POLE POSITION BONUS screen.



Position	Car model	Winning time	Difference from winning time
1	MIRAGE CyborgR	0:41:043	
2	KEVIN DZG	+0:340	
3	CIVIC-FERIO-93 SR	+0:599	
4	DEMIO GL-X	+1:179	
5	S14SILVIA Q's	+1:332	
6	ELEGACY WG GT-B	+15:227	

REPLAY
Replays the most recent race

NEXT
Select NEXT

POLE POSITION BONUS

If you come in 1st place in the qualifying run, you receive a sum of prize money called the POLE POSITION BONUS. Press any button to begin the RACE/FREE SESSION phase.

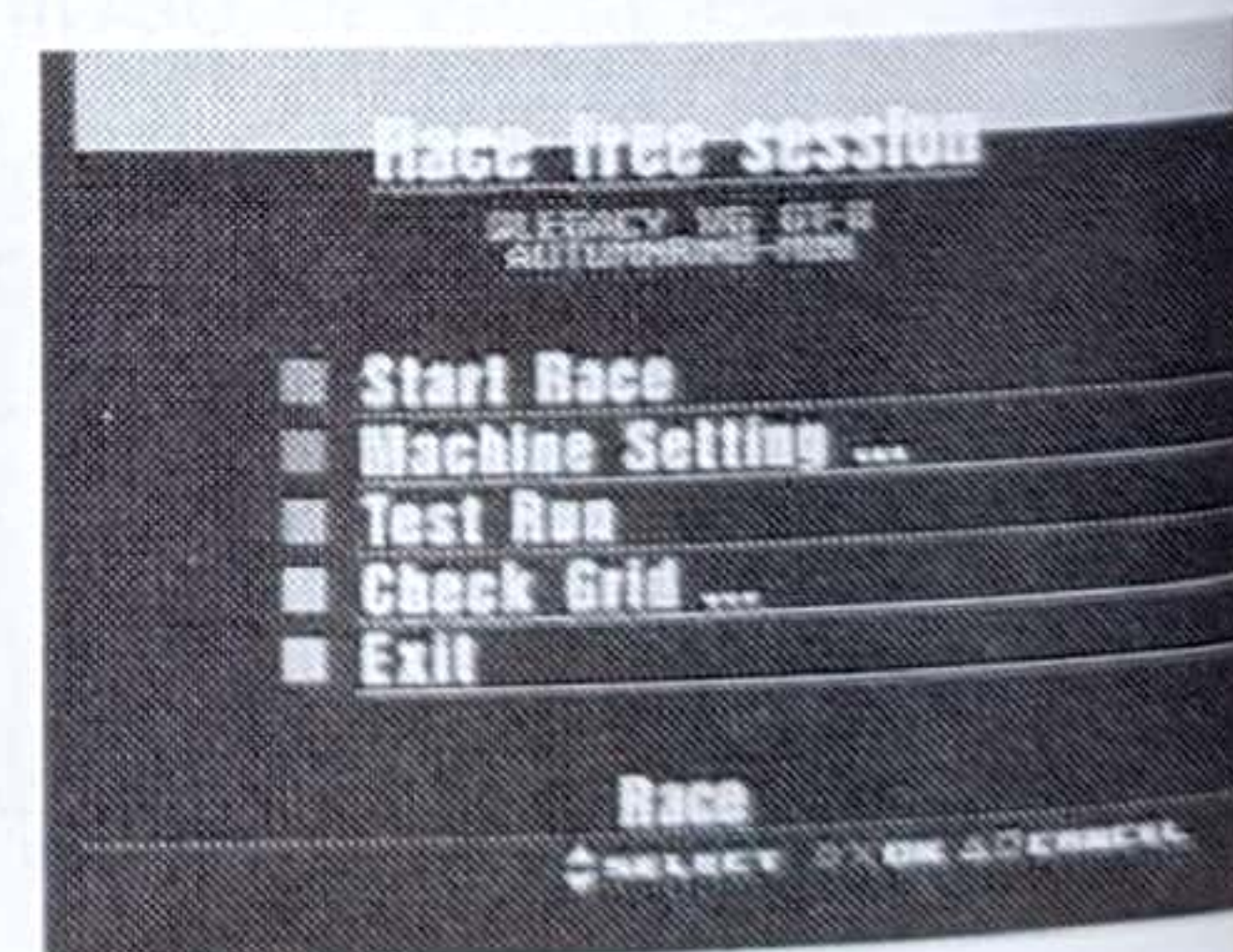
RACING: THE FINALS

Select Test Run to begin your test run, or Start Race to begin the finals.

This is a race against 5 rival cars. The finals end when the predetermined number of laps is completed.

FINALS COMPLETED

During the test run, you can lap the course as many times as you wish until you decide to retire or go on to the qualifying runs.



VIEWING THE FINAL RESULTS

FINAL RANKING

This shows the ranking in the finals. After the final ranking is displayed, the next screen appears automatically.

Winning time
Difference from winning time
Car model
Position



Result	
1	MIRAGE CyborgR 0:41:043
2	REVIN B2G +0:340
3	CIVIC FENIX 93 SR +0:600
4	DEMIO GLX +1:170
5	SIASILVIA 0's +1:332
6	ELEGACY WG GT-B +15:227

Results NEXT

AUTOMATIC

These are the points awarded to each driver according to position in the finals. The points awarded are, in descending order beginning with 1st place: 9, 6, 4, 3, 2, 1

The next screen appears automatically.

TOTAL POINTS

This is the point ranking, where cars are ranked by the total number of points they have accumulated in all races held up to that point. To see the prize money totals, select NEXT

PRIZE MONEY WON

Each driver is awarded an amount of prize money commensurate to their position in the final ranking.

Press any button to proceed to the next race.

MENUS – a quick summary

i) MAP MENU

On the Map Menu, each separate menu is represented with an icon and a name. To bring up a menu, simply click on the menu's icon.



ii) MY HOME

For viewing the cars you have purchased, displaying your car changes and record times, and loading and saving game data.



iii) CAR DEALERSHIPS

This menu is used for buying new and used cars and tune-up parts, and for selling the currently selected car.



iv) LICENSE

For obtaining the licenses you need to enter races.



v) GO RACE

Select this menu to enter any of the various types of races, including 2-player races.

vi) MACHINE TEST

Race a test course to check your car's performance and determine its limits.

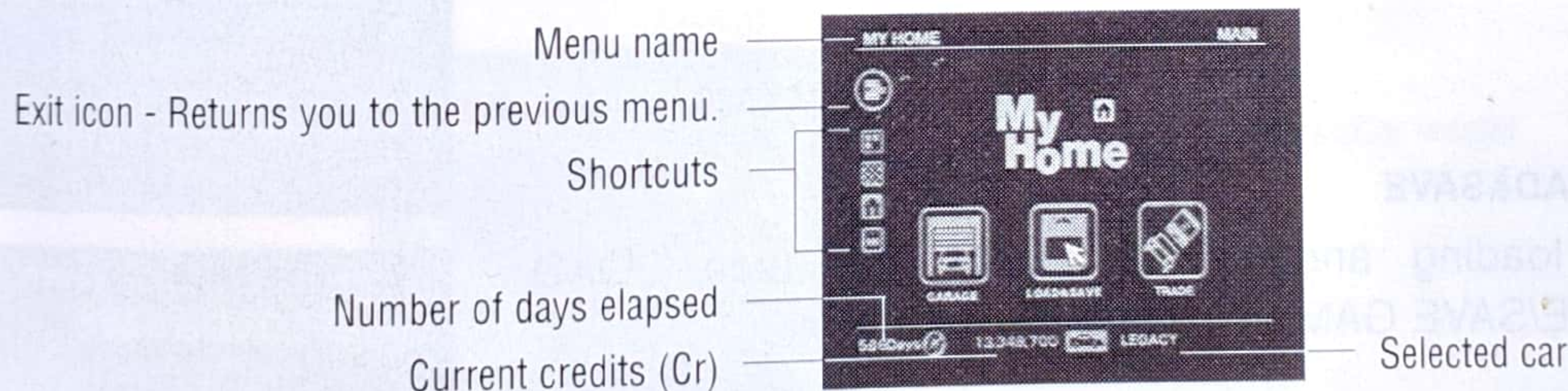
vii) CAR WASH

When your car gets dirty from racing, click here to wash it and get it clean for the next race.

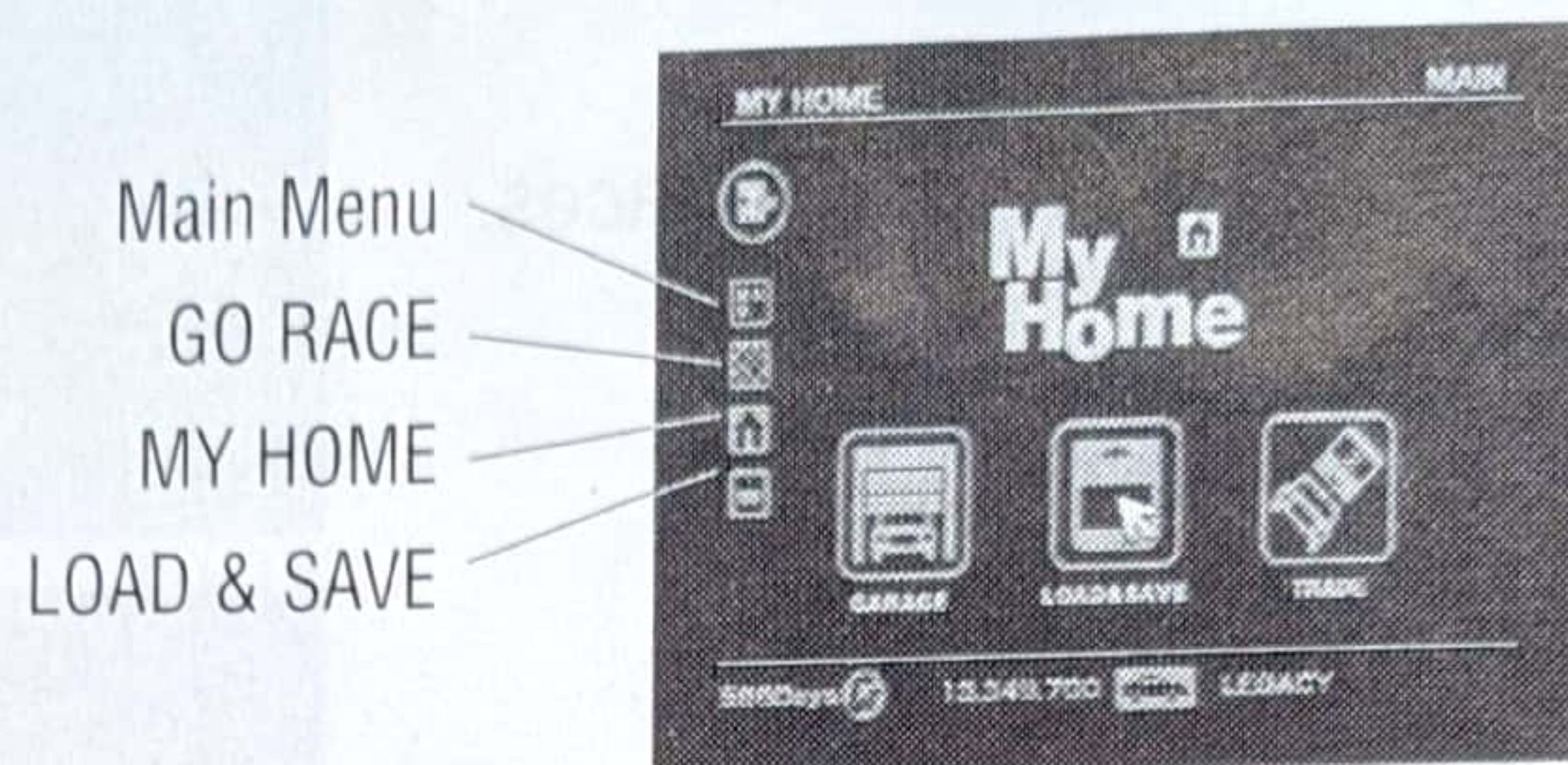


COMPOSITION OF MENU SCREENS

The example below shows the basic composition of menu screens.



FOR JUMPING DIRECTLY TO ANOTHER SCREEN



MY HOME MENU

From the Map menu, use the Directional buttons to highlight the HOME icon and press the X button to enter.

GARAGE LOAD&SAVE TRADE

i) GARAGE

This is where you compare the specifications of the cars in your possession in order to decide which one to use in the next race (see the GARAGE section below)

ii) LOAD&SAVE

For loading and saving game data (see LOAD GAME/SAVE GAME earlier in this manual)



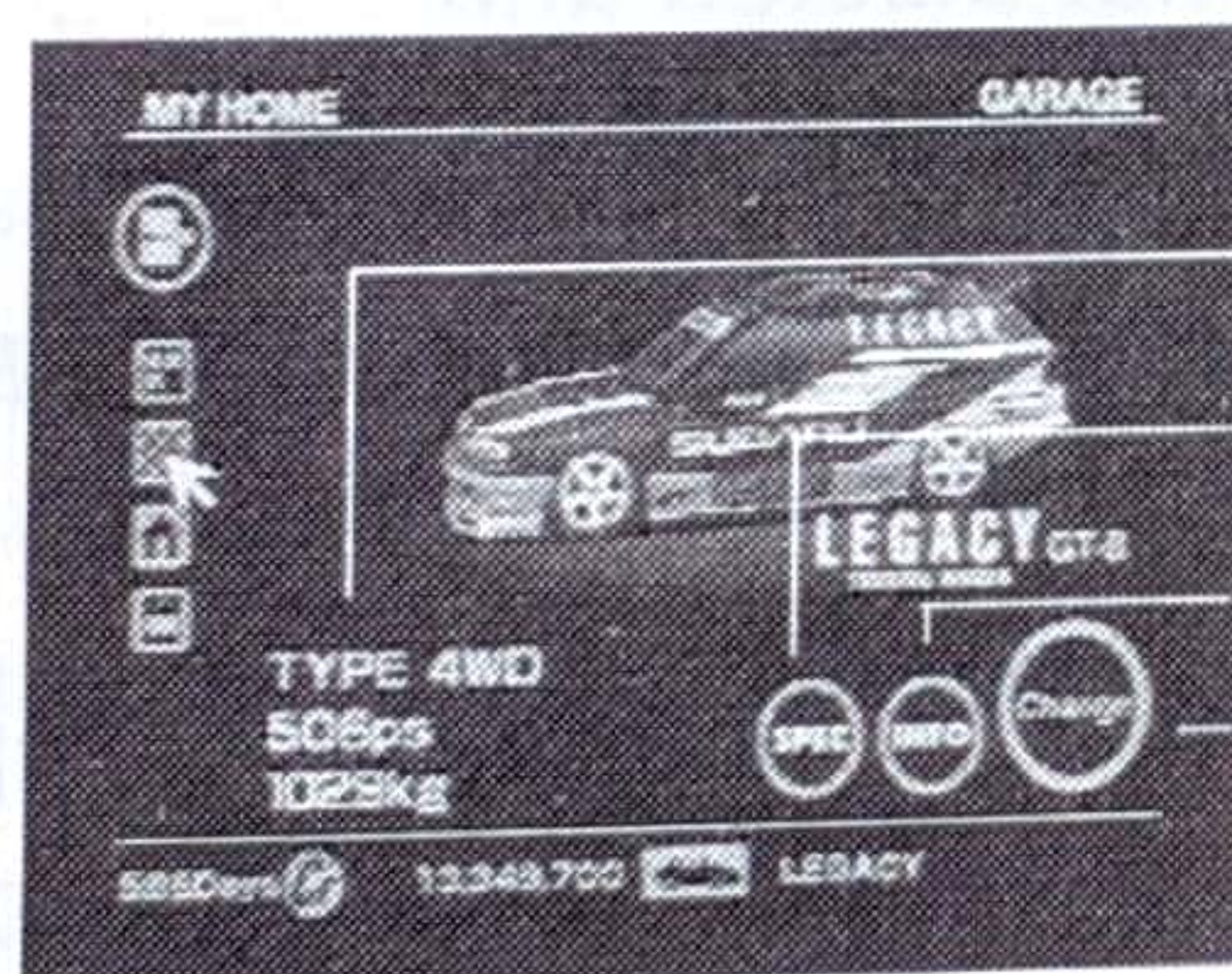
iii) TRADE

This feature allows a car saved on a Memory card in Memory card slot 2 to be transferred to your Garage during the current game. Use the UP/DOWN Directional buttons to highlight the car you wish to trade. You'll be asked to confirm that you wish to transfer the car you've selected by selecting YES. NOTE: You can only trade a car if you possess enough money for the car you've selected. For more information, see the TRADE section below.

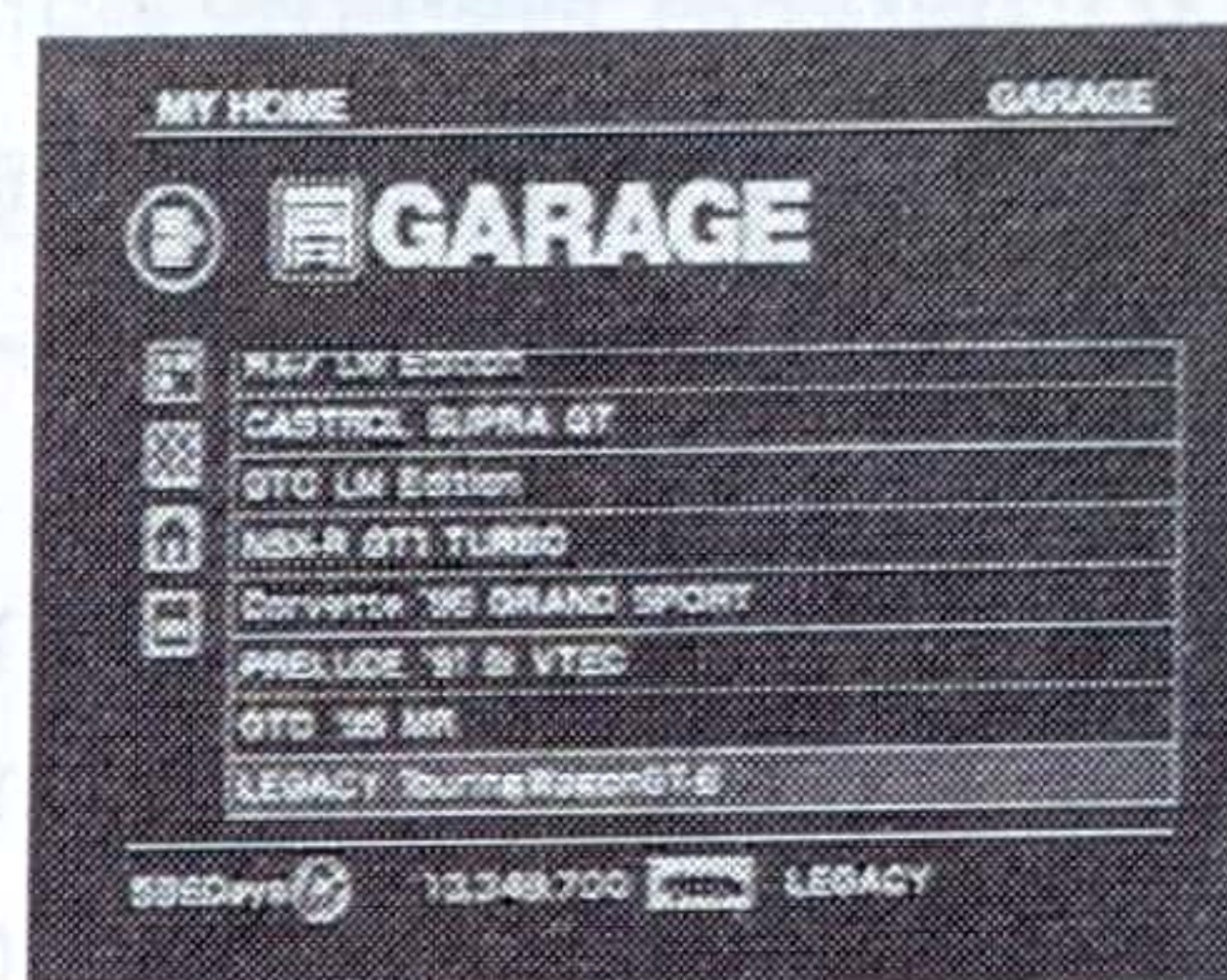
GARAGE

Here you'll find a list of all the cars you currently own. To check out the specifications of one of your cars, move the cursor to that car and select it to bring up the Information screen.

Select SPEC or INFO to see detailed information about your car, or select Change Cars to make this the car to use in the next race.



Drive system/Horsepower/Car weight
SPEC
INFO
Change Cars



NOTE: When you select Change Cars, that car becomes your selected car.

MY HOME MENU

LOAD & SAVE

See the section LOAD & SAVE in QUICK ARCADE.

TRADE

Caution: Do not remove the Memory card while an operation on this menu is in progress. Doing so may result in the loss of data on the Memory card or cause the game to malfunction. It is advised that you do not insert or remove Memory cards once the power is turned on. Make sure there are enough free blocks on your Memory card before commencing play.

With this feature, you can transfer to your GARAGE a car from GRAN TURISMO mode data stored on a Memory card in Memory card slot 2. To complete a trade, you have to pay a registration fee as well as the total cost of all parts installed in the car. The cars and credits in the game data in Memory card slot 2 remain the same after trading. In other words, the traded car is not deleted and the credits you pay are not transferred to the GARAGE.

First, ensure the Memory card containing the data with the car in the Garage is inserted into Memory card slot 2.

The contents of the Garage data stored on the Memory card appear on the screen. Select the car you wish to trade by moving the red cursor up or down to that car.

NOTE: Any parts installed prior to when the data was saved are also added to the Garage along with the car.



CAR DEALERSHIP MENU



NEW CAR	Purchase a new car here.
USED CAR	For buying and selling used cars.
SPECIAL MODEL	This is where authentic racing cars can be purchased.
TUNE-UP SHOP*	This is a parts and tune-up shop where you can purchase various types of auto parts.

* The items that are available on this menu vary depending on the dealership.

NEW CAR

When you select the car that you want from the new car list, the INFORMATION screen for that car appears. To view other pages, select BACK or NEXT..

Select SPEC or INFO to see detailed information about the car. If you want to buy the car, select BUY.

BUY

INFO

SPEC

Drive system/Horsepower/Car weight



USED CAR

If you select BUY, a list of all models currently available for purchase is shown. Move the cursor up or down the list to the car you wish to buy, then select it by pressing the X button to bring up the screen for that car. To help you decide whether or not to buy the car, take a look at the SPEC and INFO screens. If you decide to buy the car, select the BUY icon and press the X button.

INFO

BUY

SPEC

PRICE



SELL

If you wish, you can sell the currently selected car. The purchase price appears on this screen. If the price is acceptable to you, select the SELL icon and press the X button to sell the car.

Purchase price (in credits)

SELL



NOTES: As the inventory of used cars changes regularly, it's a good idea to check back here frequently. Car colour cannot be changed when buying a used car. Any dealer's car can be sold here.

SPECIAL MODEL

This is where you can purchase specially tuned, authentic racing cars. The prices may be exorbitant, but these advanced machines far outperform the mass-production models. Select SPEC to see detailed information about a special model. If you wish to buy the car, select the BUY icon and press the X button.

Price (in credits)

Change Car Colour

Drive system/Horsepower/Car weight

BUY

SPEC



NOTE: Some Car Manufacturers do not offer special models.

TUNE-UP SHOP

i) **PARTS:** You can install parts to enhance your car's performance. Fine-tune your auto parts on the Machine Setting menu.

ii) **BUY PARTS:** As the type of part you will need depends on the car's model, parts for the currently selected car model must be purchased from the manufacturer of the currently selected car.

iii) **SETTINGS/REPLACE PARTS:** Adjust the settings as you drive the course to determine which settings (and which parts) are best suited to your driving style and to the conditions of the race.

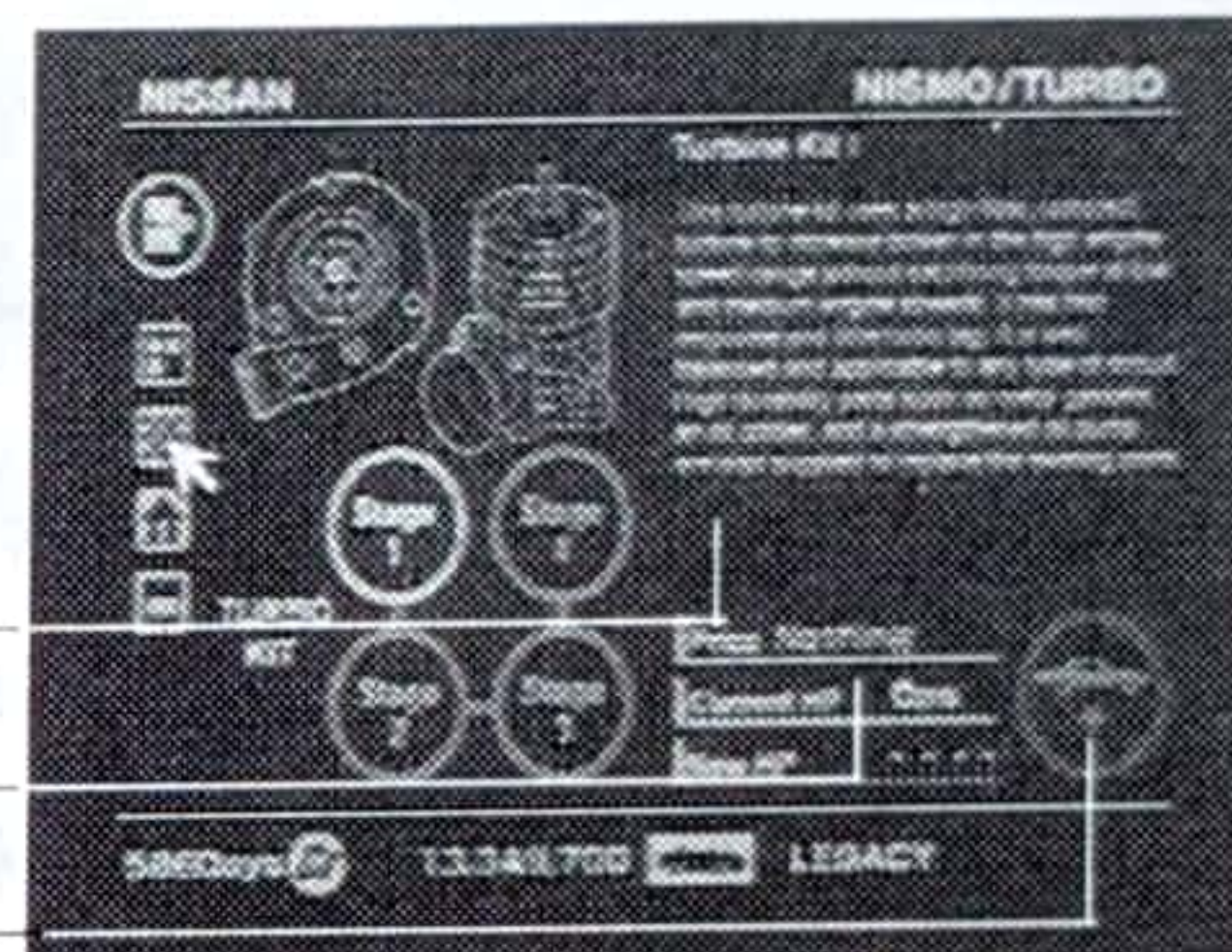
The Tune-up Shop offers a variety of tune-up parts.

To purchase parts, first select the category of parts and then the specific part that you want.

On the BUY screen, refer to the description of each part to determine which type of part you need.

To purchase the part, select BUY.

Description of part
Part price (in credits)
BUY

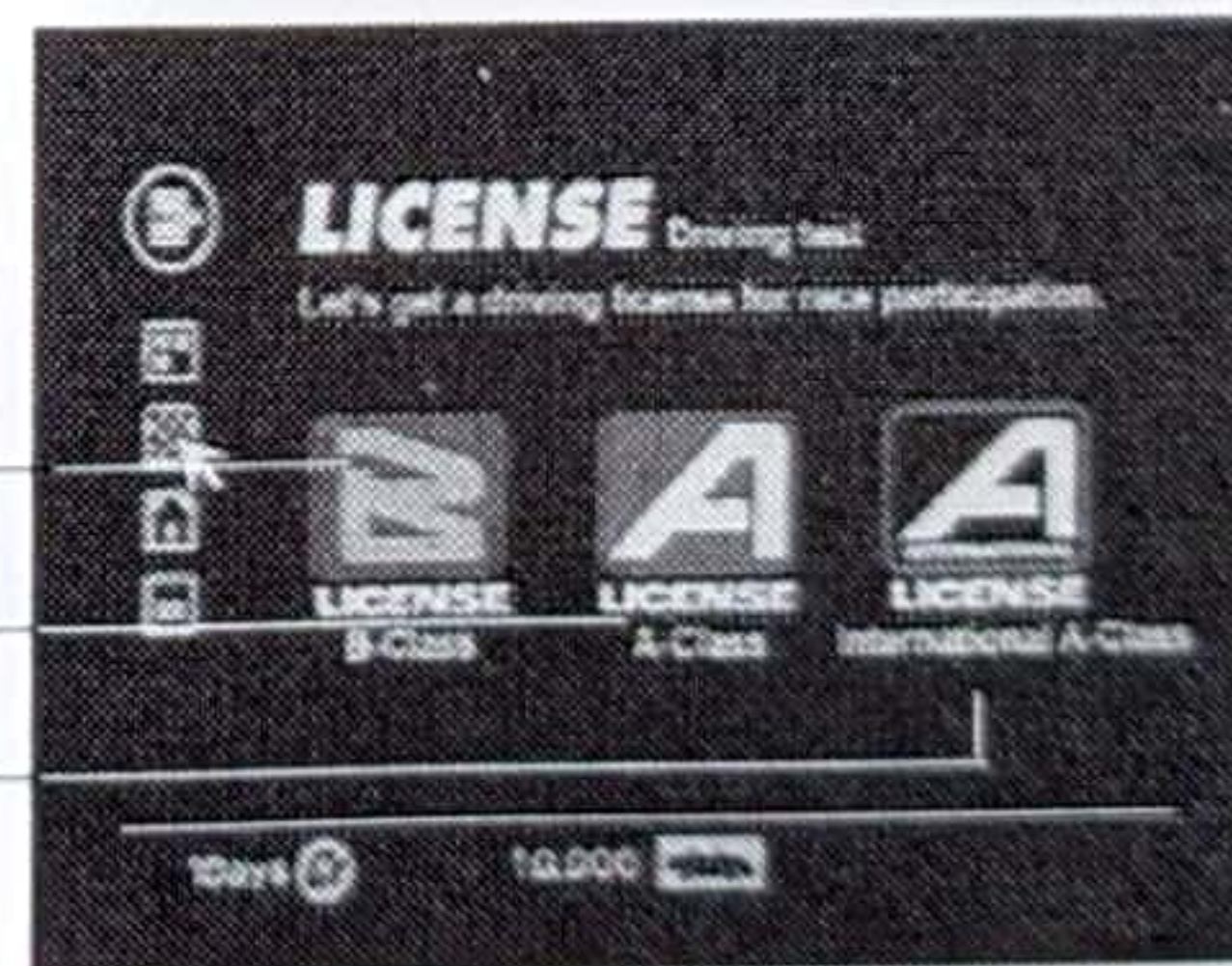


NOTES: Some manufacturers do not have a Tune-up Shop. The actual name of each Tune-up Shop varies from dealer to dealer. For information about each part, refer to the 'GT Racing Strategy Guide' later on in this book.

LICENSE MENU

The three classes of licenses are Class B, Class A and Class A International, which must be obtained in that order. When obtaining a license for the first time, you must take the Class B license test.

Class B License
Class A License
Class A International License



CLASS B LICENSE

STARTING AND STOPPING 1

STARTING AND STOPPING 2

BASICS OF CORNERING 1

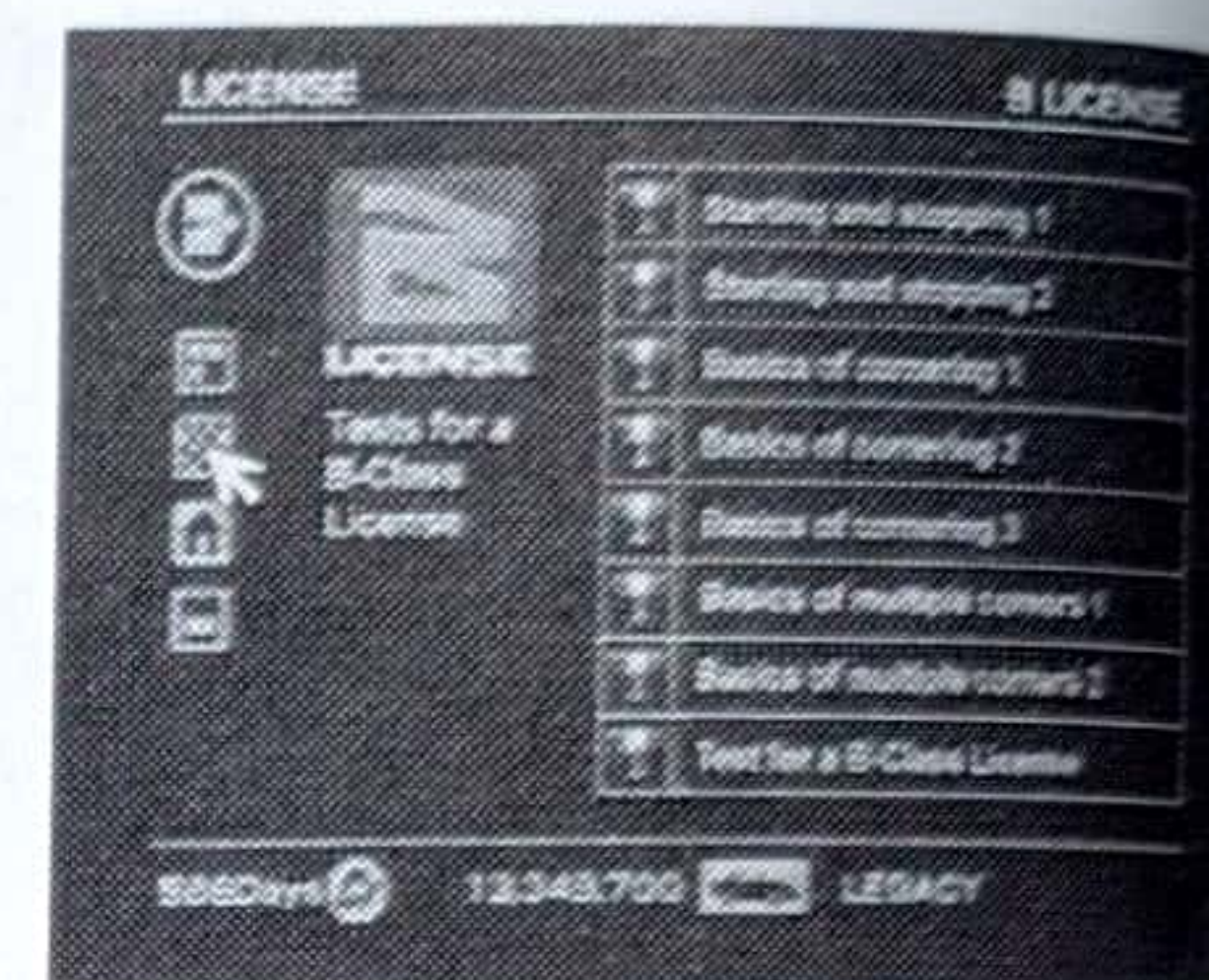
BASICS OF CORNERING 2

BASICS OF CORNERING 3

BASICS OF MULTIPLE CORNERS 1

BASICS OF MULTIPLE CORNERS 2

TEST FOR A B-CLASS LICENCE



A license test comprises 7 preliminary tests and 1 final test. Unless you take and pass the 7 preliminary tests (starting at the top of the Test List), you cannot take the final test, which is at the bottom of the Test List.

The Class B License requires mastery of basic automobile operation.

- The preliminary tests do not have to be taken in the order in which they appear on the Test List, but taking them in this order will enable you to refine your driving skills.
- After taking the test, a cup commensurate with your performance on the test will appear in the column of tests from the Test List that you have passed.

CLASS A LICENSE

PRACTICAL CORNERING 1

PRACTICAL CORNERING 2

PRACTICAL CORNERING 3

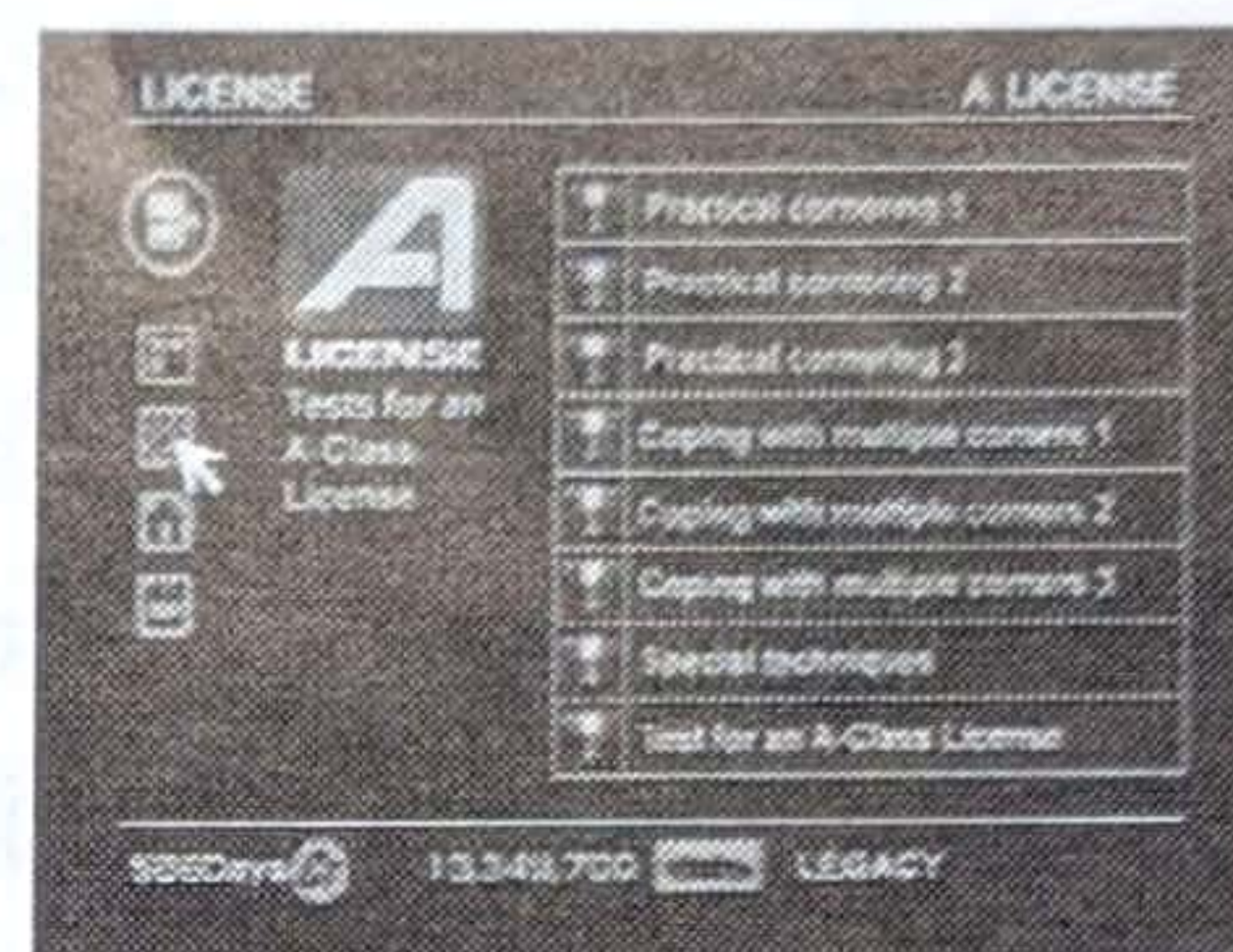
COPING WITH MULTIPLE CORNERS 1

COPING WITH MULTIPLE CORNERS 2

COPING WITH MULTIPLE CORNERS 3

SPECIAL TECHNIQUES

TEST FOR AN A-CLASS LICENSE



Passing the Class A License test requires a command of more advanced auto racing techniques. Obtaining a Class A License will allow you to enter a far broader range of races.

CLASS A INTERNATIONAL LICENSE

HIGH-SPEED RING ? TIME ATTACK

SS ROUTE 5 ? TIME ATTACK

GRAND VALLEY ? TIME ATTACK

DEEFOREST ? TIME ATTACK

AUTUMNRING ? TIME ATTACK

TRIAL MOUNTAIN ? TIME ATTACK

SS ROUTE 11 ? TIME ATTACK

INTERNATIONAL ? TEST: A-CLASS LICENSE



The test for a Class A International License takes place entirely in the TIME TRIAL mode. This license requires competitive-level speed. Obtaining a Class A International License allows you to enter any race.

GO RACE MENU

GT LEAGUE:	Race in Official League competitions
SPECIAL EVENT:	Unique racing events
SPOT RACE:	Single-race competitions for beginners
TIME TRIAL:	Your car runs the course alone to try for the fastest time possible
MEMORY CARD BATTLE:	Hold 2-player races using game data on a Memory card



GT LEAGUE

SUNDAY CUP
CLUBMAN CUP
GT CUP
GT WORLD CUP
License required



This is the official GRAN TURISMO championship. The objective here is to become League champion. As in other auto racing leagues, victory in a GT League competition is determined by total ranking points earned in 3 to 6 races. The four cup races held are, in order of difficulty and importance: SUNDAY, CLUBMAN, GT and GT WORLD.

For detailed information about each league competition, refer to the 'GT Racing Strategy Guide' later on in this book.

SPECIAL EVENT

There are 13 different special racing events, including gruelling endurance races and unique regulation races such as races limited by car type/drive train type and

mega-speed races with super-fast high-spec machines. To move back to the previous screen or forward to the next screen, select BACK or NEXT from the onscreen menu. For detailed information about each event, refer to the 'GT Racing Strategy Guide' later on in this book.

SPOT RACE / TIME TRIAL

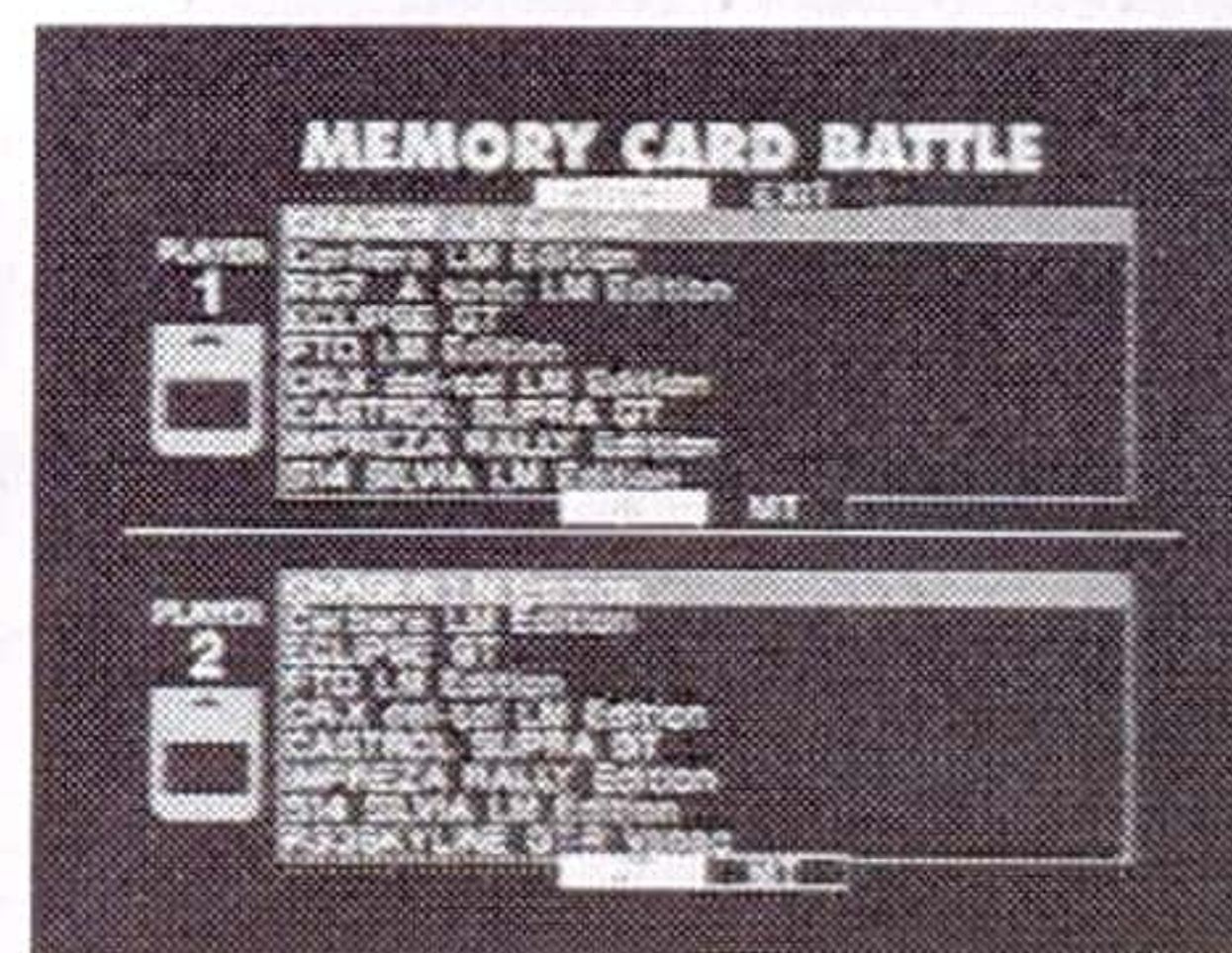
SPOT RACE: Single races for beginners. Select the course you want to run. No license is required.

TIME TRIAL: Here, your car runs the course alone, and the objective is to achieve the fastest time possible. Begin by selecting the course you wish to run. It's a good idea to practice here as a way of preparing for the GT LEAGUE and checking your settings. As in the SPOT RACE, no license is necessary.

MEMORY CARD BATTLE

Caution: Do not remove the Memory card while an operation on this menu is in progress. Doing so may result in the loss of data on the Memory card or cause the game to malfunction. It is advised that you do not insert or remove Memory cards once the power is turned on. Make sure there are enough free blocks on your Memory card before commencing play.

With two Controllers connected, you can have 2-player competitive races using game data stored on a Memory card. This requires two Memory cards each containing game data for at least one car.



MEMORY CARD BATTLE: The Flow of Gameplay

First, insert the Memory cards containing the game data for Player 1 and Player 2 into Memory card slot 1 and Memory card slot 2, respectively. The GARAGE contents appear on the screen.

On the horizontally-split screen, each player selects the car he or she wants to use. Once each player has entered his or her decision, Player 1 must select START. Player 1 then selects the course and the race begins.

NOTE: The parts and settings used are those from the time that the data were saved.

The race takes place on a horizontally split screen. Each player can change the view independently of the other player, but please note that the rear-view mirror does not appear in either view.

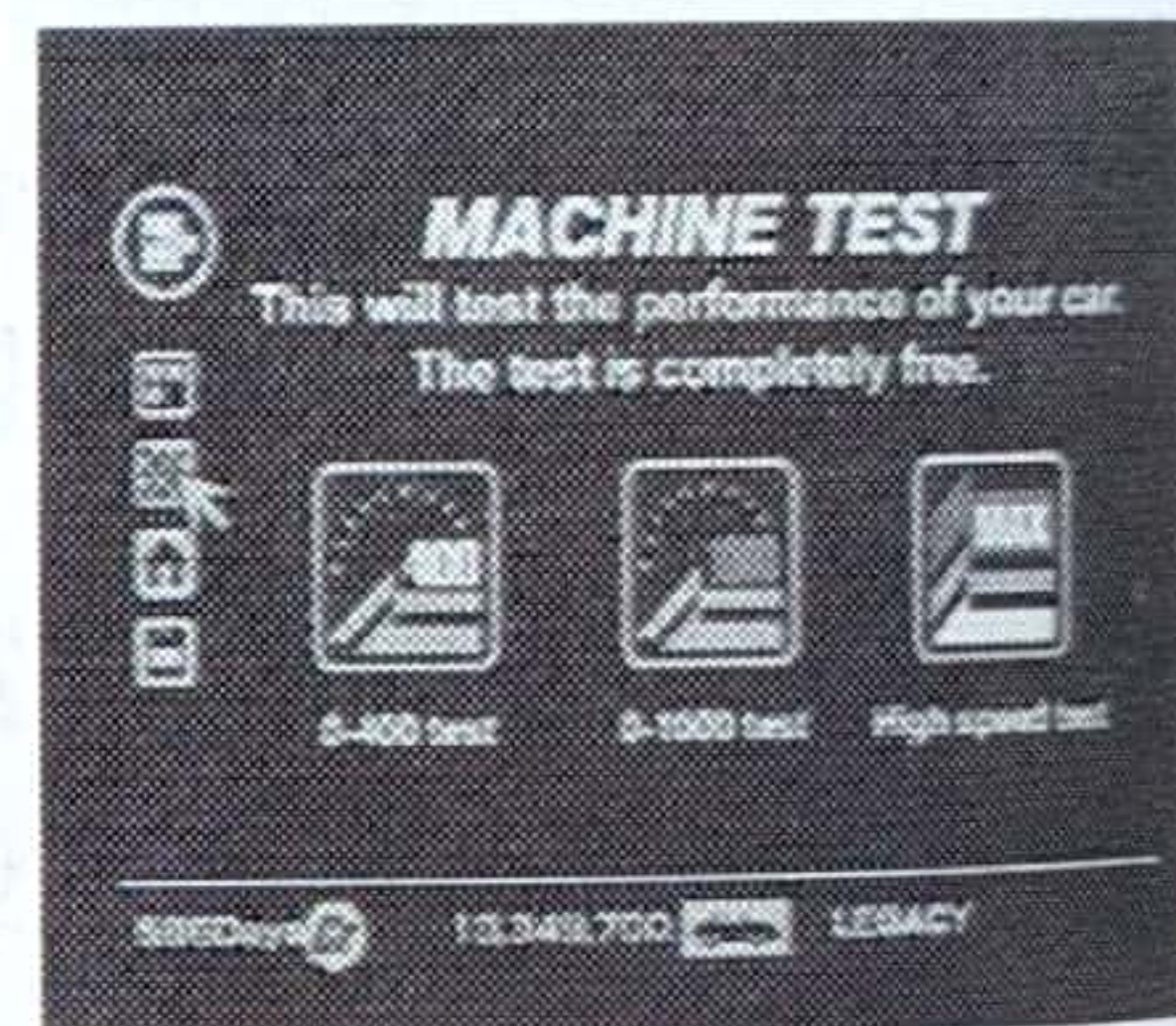
MACHINE TEST MENU

This is for testing your car's performance, such as acceleration and top speed.

0-400 Clock your time on a 400-meter straightaway

0-1000 Clock your time on a 1,000-meter straightaway

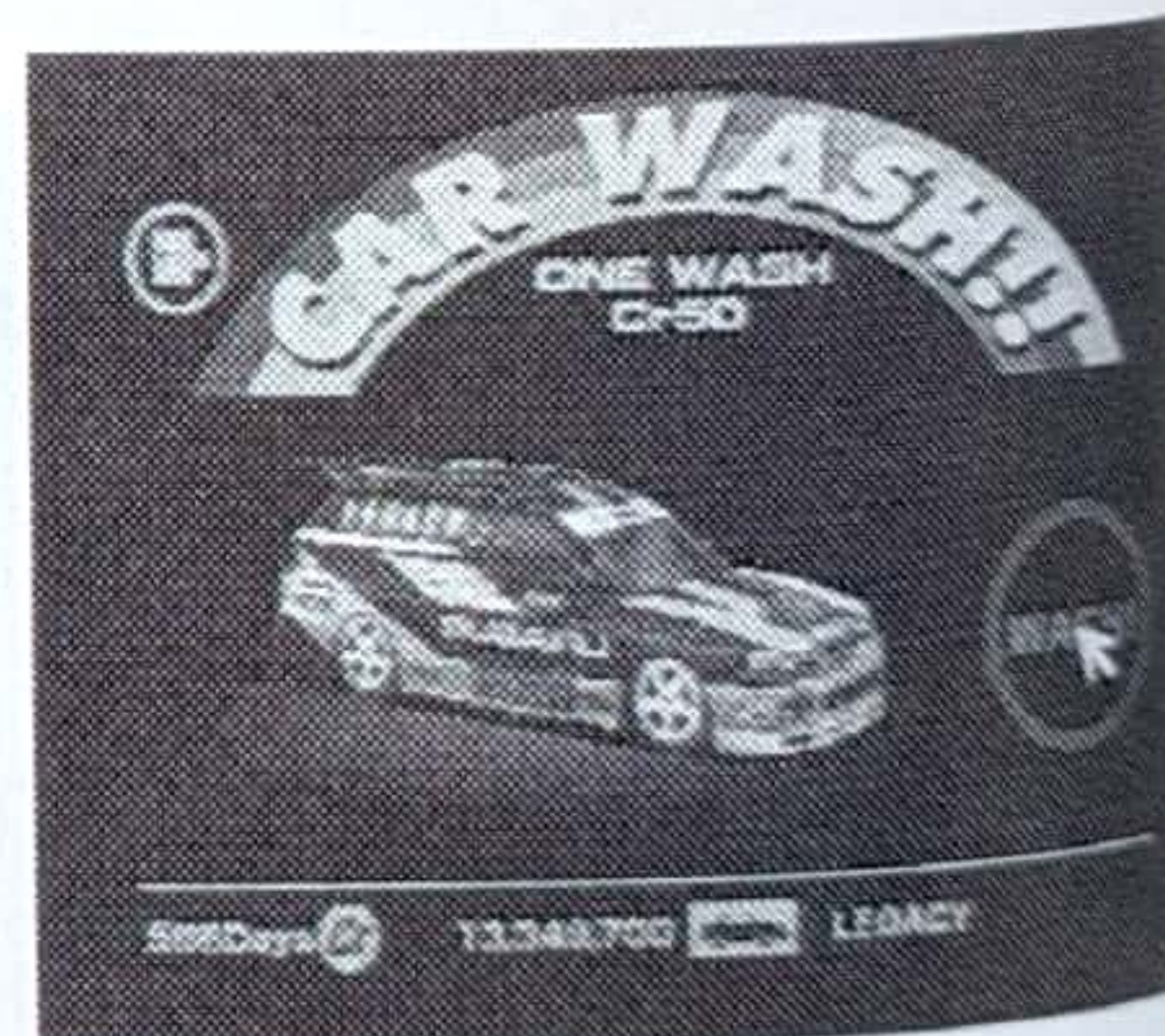
Top Speed Clock your top speed on an oval course



CAR WASH MENU

When your car gets dirty from racing, bring it here to get it clean. Select WASH! to give your car the complete valet service – one service costs 5,000 credits.

WASH!



NOTE: Whilst dirt does not affect a car's performance, it will be visible on your car in the replays if you do not enter it for a valet service.

PIT STOP

Entering the Pit Road during a race automatically initiates a PIT STOP. During a PIT STOP, your car's tires are replaced with new ones. The condition of your tyres is indicated on the Tyre Indicator.

TYRE

Tyres are replaced with new tyres of the same model that were on your car at the start of the race. During a test run, you can take a PIT STOP to the FREE SESSION menu from the Pause menu.

FREE SESSION MENU

The Free Session menu is where you can change your car's settings and take a test run.

START QUALIFY / START RACE	Proceed to the qualifying round or to the finals
----------------------------	--

CAR SETTING	For changing your car's settings or replacing parts
-------------	---

TEST RUN	Begin the test run
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ENTRY LIST / CHECK GRID	Entries are shown in order of starting position (on the ENTRY LIST) and in order of racing results (on the CHECK GRID)
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Exit icon	Stops the race
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CAR SETTING MENU

On the Free Session menu, selecting Machine Setting brings up the Machine Setting screen.

This screen is for tuning and replacing parts and for loading and saving settings.

SETTINGS	For changing the settings of parts
CHANGE PARTS	For changing parts
SAVE SETTING	Saves the current settings
LOAD SETTING	Loads settings from a Memory card
RETURN	Returns you to the FREE SESSION menu

- Only parts already installed on your car can be tuned.
- Setting data is saved separately from game data and takes up 2 Memory card blocks.

SETTING/CHANGE OPERATIONS

ANALOG CONTROLLER (DUAL SHOCK)

L1 button	Takes you to the PARTS SETTING screen
R1 button	Takes you to the CHANGE PARTS screen
○ button	Select / confirm
× button	Select / confirm
△ button	Cancel
□ button	Cancel
Directional buttons	Move cursor / alter settings

- Press the L1 button and R1 button along with the Directional buttons to change a setting's numerical value rapidly.
- Operations for the Controller (digital) is the same as the operations above.
- When using the neGcon™, the operations are as follows:

L button	Takes you to the PARTS SETTING screen
R button	Takes you to the CHANGE PARTS screen
A button	Select / confirm
I button	Select / confirm
B button	Cancel
II button	Cancel
Directional buttons	Move cursor / alter settings

SET UP SCREEN

This screen is used to tune your car's parts. Installed parts can be fine-tuned and settings are divided into 3 categories. First, select the category of the part you wish to tune, then press the RIGHT Directional button to select the setting parameter you wish to change.



SUSPENSION For adjusting the suspension, wheels and other related parts



ENGINE For adjusting the engine and related parts



AERO DYNAMICS For changing settings that affect the car's aerodynamic performance

SETTING PARAMETERS: SUSPENSION

SPRING RATIO

Adjustable parts: Racing support

Adjust the stiffness of the springs. The stiffer the springs are, the quicker the car's responsiveness will be, but excessive stiffness will result in an unstable vehicle attitude on uneven road surfaces.

RIDE HEIGHT

Adjustable parts: Semi-racing, racing support

Adjust the car's height. Lowering the car's height gives it a lower centre of gravity, for a stable ride. When doing so, also raise the spring ratio and damping ratio to prevent bottoming out due to stroke reduction.

DAMPER

Adjustable parts: Semi-racing, racing support

Adjust the damper's damping force (damping ratio). A too-soft damping force makes the car unstable, while a too-hard damping force makes for a bumpy ride at spots such as corner exits. It's important to match this setting to the spring ratio.

CAMBER

Adjustable parts: Semi-racing, racing support

Adjust the negative camber angle. A negative camber angle enhances stability during cornering in which the car rolls, but at the same time lowers braking power and steering response. Be sure not to make the negative camber angle too large.

STABILISERS

Adjustable parts: Stabilizers (all types)

Adjust the stabilisers' roll rigidity. Generally, greater rigidity increases stability during turning, although the ideal rigidity depends on the suspension settings. Proper adjustment of the front stabilisers' roll rigidity is especially important with front-engine, front-wheel-drive vehicles.

BRAKES

Adjustable parts: Brake balance controller

Adjusts the front and rear brake balance. Strong front brakes give the car a tendency to understeer. Strong rear brakes, a tendency to oversteer. Adjust for a slight tendency to oversteer so that the rear wheels slide to the outside when braking into a curve.

SETTING PARAMETER: ENGINE

TURBO BOOST

Adjustable parts: All turbine kits

Adjust the turbo boost pressure.

When this is set high, peak power rises but pickup and responsiveness to acceleration decline.

GEAR RATIOS

Adjustable parts: Racing support

Adjust the gear ratio of each gear. Gear ratio must be set according to engine characteristics. Cross-setting is essential with turbo-engine cars because of their limited peak. A large gear ratio for the final gear improves acceleration but narrows the speed range of each gear.

SETTING PARAMETERS: AERODYNAMICS

DOWN FORCE

Adjustable parts: Racing modifications

Adjust the down force. Increase the down force on the drive wheels to enhance stability at high speeds.

A large down force at the front gives the car a tendency to understeer, and at the rear, a tendency to oversteer.

CHANGING PARTS

From among the parts you have purchased, you can select one to install in your car, or remove a part that is currently installed. Parts are divided into 4 general categories. First, select the category of the part you wish to change, then use the RIGHT Directional button to select the specific part.



SUSPENSION

Replace parts related to suspension and the tires



ENGINE

Replace engine parts



DRIVE TRAIN

Replace drive train parts



ASPIRATION

Replace intake and exhaust parts

EXCHANGING PARTS

Move the cursor up and down through the categories and select the parts you wish to change.

When you select a certain vehicle part, a list of available parts is displayed. Parts you have already bought are highlighted, so select the parts you wish to use. If you press the LEFT Directional button on the part type list, you will be returned to the category selection list.

REPLAY THEATRE

REPLAY FILES

The size of replay files is displayed in units called SECTORS. You can allocate 2 to 15 Memory card blocks depending on the amount of free blocks there are on your Memory card.

NOTE: Depending on the type of peripheral you are using, and the amount of laps selected, the number of sectors required for a save will vary.

SAVING REPLAY FILES

When there is no replay data saved to a Memory card, you can create replay data. You will need a Memory card with a minimum of 2 free Memory card blocks available. If the Memory card already contains replay data, you can overwrite it. If there is insufficient space on the Memory card, you should erase any unnecessary data on the Memory card using the L1 button and R1 button (pressing the L1 button and R1 button together deletes replay files) or use the PlayStation® Internal Memory card manager as outlined in its Instruction Manual.



NOTE: In 2-Player, and in 1-Player Endurance modes, depending on the peripherals used and the amount of laps chosen, some races may not be replayed in their entirety.

REPLAY THEATRE MENU

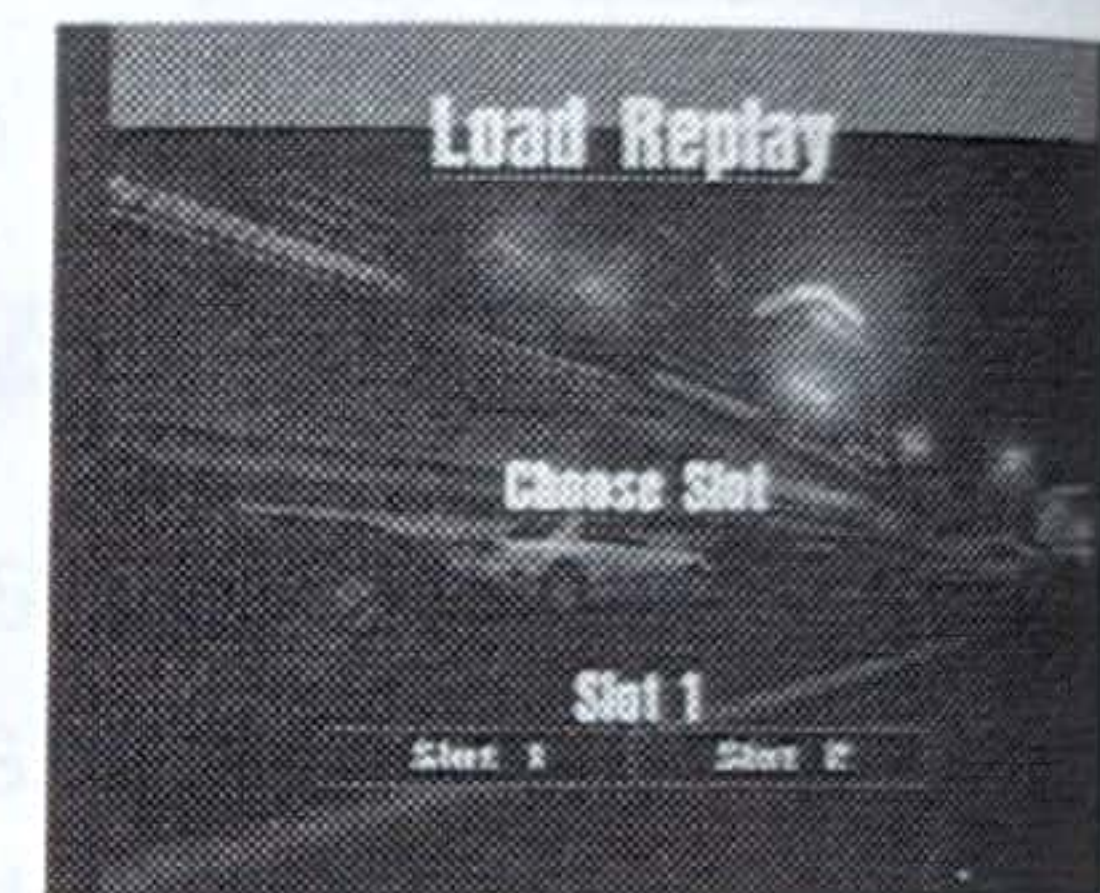
This menu is for managing replay files saved onto Memory cards. You can use it to replay a race, to change the title of a file, or to delete a file.

LOAD REPLAY	Load and play replay files
EDIT REPLAY TITLE	Change the title of a replay file
DELETE REPLAY	Delete a replay file
DEMONSTRATION	Play a pre-recorded replay file from the game Disc
Exit icon	Return to the Main Menu



LOAD REPLAY

With this menu you can load a file from a Memory card and replay it. Select the file you wish to replay. Selecting the Exit icon takes you back to the REPLAY THEATRE menu without replaying a file.



DEMONSTRATION

This menu replays a pre-recorded file from the game Disc. Just select the file you wish to replay. Selecting the Exit icon takes you back to the REPLAY THEATRE menu without replaying a file.



The GRAN TURISMO™ game Disc contains various replay files which can be used as a reference to improve your driving skills or watched like a movie simply for the fun of it.

EDIT REPLAY TITLE

Select the file that you wish to re-name. This takes you to the TITLE REGISTRATION screen. You should input the new file name and then select END. After checking the new title details are correct, select OK. The new file title will now be saved. Selecting the Exit icon takes you back to the REPLAY THEATRE menu without re-naming the file.

DELETE REPLAY

To delete a file, first select the file you wish to delete, then go to OK. Selecting the Exit icon takes you back to the REPLAY THEATRE menu without deleting a file. You can also select a number of files to delete together

OPTION MENU

This menu controls the game and Controller settings across a number of different settings screens. Select a screen you want using the LEFT & RIGHT Directional buttons and confirm your selection by pressing the X button. To change options, use the UP & DOWN Directional buttons to highlight the option category you wish to change and the LEFT & RIGHT Directional buttons to alter each option. Once you have configured the options you want, press the X button again to confirm the selection. On the XA MUSIC TEST screen, use the Directional buttons to highlight a music track and press the X button to listen to it.

NOTE: The OPTION settings, QUICK ARCADE mode data and GRAN TURISMO mode data can be saved onto a Memory card. Only one save from each mode can be saved to each Memory card.

CONFIGURATION 1	This screen controls the settings for 2-player battles, back-ground music & sound
CONFIGURATION 2	This screen controls the settings for the race screens
BUTTON CONFIGURATION	This screen allows you to alter the Controller configurations during the game
ANALOG SETTING 1P & 2P	On these screens you can adjust the neGcon™ settings
XA MUSIC TEST	Listen to the different music samples from the game

CONFIGURATION 1

This screen controls the settings for 2-player battles, Background music & sound as well as allowing you to switch the vibration function of your Analog Controller (Dual Shock) on and off. These settings are effective for both the QUICK ARCADE mode and the GRAN TURISMO mode.

2-PLAYER BATTLE

LAPS: Sets the number of laps for 2 Player BATTLES. Choose from 1 lap to 30 laps or select FREE.

TYRE DAMAGE: Sets the speed of wear on the tyres: NONE, SLOW or FAST.

HANDICAP: This function allows you to set a handicap to increase the speed of the car of the player who is losing: NONE, LOW or HIGH. NONE offers the greater challenge to the losing player, HIGH offers a greater challenge to the winning player.

SOUND

MUSIC: Turns the background music volume up or down.

SE: Turns the sound effects volume up or down.

DUAL SHOCK

VIBRATION: Turns the Analog Controller (Dual Shock) vibration function ON or OFF.

CONFIGURATION 2

This screen controls the settings for the race screens in both the QUICK ARCADE and the GRAN TURISMO modes.

VIEW STATUS

VIEW POSITION: This sets the viewpoint at the start of the race: DRIVER places the camera inside the car, and CHASE has the camera following the race from behind your vehicle.

CHASE VIEW: Set the camera angle for when you are chasing other cars. Choose from LOOSE (lower than normal), NORMAL and TIGHT (higher than normal).

COURSE MAP: You can choose whether or not to have a map of the course displayed on the screen during the race. Choose between ON or OFF.

VIEW VOLUME: This sets the width of your view. Choose between NARROW, NORMAL and WIDE. The wider the view, the faster you feel you are driving.

BUTTON CONFIGURATION

This screen alters the Controller configuration settings during the game. Select the item you wish to change using the UP & DOWN Directional buttons and press the button you would like to set for that function. If you are using an Analog Controller (Dual Shock), set the Analog mode switch ON (LED indicator lights up RED). You can now change the settings of the items marked with arrow marks on the screen using the LEFT & RIGHT Directional buttons.

Keep the START button pressed and move the Directional buttons to set the button operations. Selecting DEFAULT returns you to the normal button settings, whilst selecting the Exit icon finishes button configuration selection.

STEERING	Steering wheel operation
ACCELERATION	Accelerator
BRAKE	Brake
REVERSE	Reverse

EMERGENCY BRAKE	Hand-brake
SHIFT UP	Shift up
SHIFT DOWN	Shift down
REAR VIEW	Rear-view mirror
CHANGE VIEW	Change view

Please refer to OPERATION DURING THE RACE for details of the normal operation settings.

ANALOG SETTING

In this screen you can adjust the neGcon™ settings, including the operation of the steering, the accelerator and the brake in-game. Please note: This is an option for the analog capabilities of the neGcon™ and NOT the Analog Controller (Dual Shock). Should you wish to adjust your Analog Controller (Dual Shock) settings you may do so through the BUTTON CONFIGURATION option.

Select the item you want to adjust using the UP and DOWN Directional buttons and change the settings using the LEFT and RIGHT Directional buttons. Pressing the R button allows you to set the sensitivity for the item selected.

STEERING

CENTRE	Set the centre position of the steering wheel.
MARGIN	Set the amount of play for the steering wheel
MAX	Set the maximum position of the steering wheel

ACCELERATION

MARGIN Set the amount of play for the accelerator

MAX Set the maximum position of the accelerator

BRAKE

MARGIN Set the amount of play for the brake

MAX Set the maximum position of the brake

GRAN TURISMO
THE REAL DRIVING SIMULATOR

Please refer to the "RACE" section of the manual for more information on race operation settings.

ANALOG SETTINGS

In this screen you can adjust the steering, the accelerator and the gear shift analog capabilities of the system. Should you wish to adjust the settings, go through the "RACE" section of the manual.

Select the item you wish to adjust, and change the settings. The "RACE" section of the manual allows you to adjust the settings.

STEERING



GRAN TURISMO

THE REAL DRIVING SIMULATOR

G r a n T u r i s m o TM

R a c i n g S t r a t e g y G u i d e

Basic techniques

Basic technique

PLEASE NOTE: This is a highly detailed guide to the real-world strategies of Gran Turismo racing. However, references to the real-world operation of the clutch are only used as a guide. Gran Turismo has no user-controlled clutch. This form of strategic driving can be simulated through careful and practised use of the steering-wheel/accelerator combination. Try racing in the ARCADE mode before attempting the more difficult GRAN TURISMO simulation mode or hone your skills when trying to obtain your licenses.

ACCELERATING

Accelerating makes the car move more quickly, so the best thing is to keep your foot pressed down on the accelerator as much as possible. In an automatic car (AT) the best thing to do is to just put your foot to the floor and GO! In a manual car (MT) it goes without saying that you will have to maximise your revs at each gear change and accelerate through the gears, but once you get used to that there should be no problem. The difficult thing is to get away from the start line quickly, and this is particularly true in real-life MT cars. If you rev the engine and engage the clutch too quickly the wheels will spin. When this happens, the car will not move forward smoothly, but if you don't get any wheelspin at all it may be a sign that your revs are not

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high enough and you will not get a fast start. The trick is to keep the revs reasonably high and to half-engage the clutch rather than letting it out all at once. You should also keep the revs steady until the clutch is engaged – don't keep revving the engine up. The revs will vary depending on the car, the road conditions and the wheels, so you will need practice to improve your driving skill and get the hang of using them properly.

BRAKING

In sports driving, the most difficult and sensitive technique is braking. On a circuit, if you cannot reduce speed quickly, you will be unable to get a fast time.

Most beginners are unable to brake hard enough at first: in order to make the best use of the brake, you need to put your foot down hard. While you are still learning how to use the brakes properly, you should brake as hard as you possibly can.

More details will be given in the section on rear wheels, but when the wheels lock it means you have braked too hard. Your aim is to brake as hard as you possibly can without locking the wheels.

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FF Front engine, front drive

FF cars have the engine loaded in the front and front wheel drive. FR cars (front engine, rear drive) used to be the norm in most sedan cars, but FF cars are more spacious because there is no need for the mechanical parts transferring the power from the engine to the rear wheels, and now FF is the more popular. However, in FF cars the weight is all at the front so when turning left and right and when accelerating or decelerating the focus is always on the front wheels and it is therefore difficult to balance FF cars as sports cars. In spite of that, FF cars have been used as sports cars for quite some time now and due to the more recent advances in technology, sports hatchbacks such as the Civic have become very popular. In addition, they can be made to go faster than second class FR cars. However you should be careful of understeering in FF cars because much of the weight of the vehicle is on the front wheels, and if you drive for long periods whilst understeering the front tyres get hot and therefore begin to lose their grip. The best way to avoid this is to accelerate and steer as smoothly as you can. The main merits of FF cars are that they do not spin easily and they run well even on wet roads.

Driving

FR

Front engine, rear drive

Basic technique

FR cars are rear wheel driven with the engine at the front. In recent years they have declined in popularity as sedan cars, but as sports cars they have good balance and are still very popular. There are two reasons for this: for one thing, the front and rear weight balance is close to 50 / 50; also, as the steering is handled by the front wheels and the power comes from the rear wheels, a good driver can use all four wheels to their full advantage. This means that FR cars are comparatively easy to handle and to control, and can help to improve your driving technique. In addition, they are also the best cars in which to handle drifting. So, if you learn the basic skills of driving this car will respond well and will be a lot of fun to drive.

Both the front and rear wheels have their own particular role in FR cars, so neither one nor the other will get hot, and you don't need to alter the way you drive to react to particular conditions. Also, one final merit is that an FR car will slow down gradually rather than suddenly grinding to a halt.

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MR

Middle engine, rear drive

As you will probably know from F1 racing cars, if it's speed you're after the best car to go for is one with the engine in the middle. Taking the largest, heaviest part of the car, the engine, and placing it at the centre of the vehicle, allows you far greater control when cornering.

An MR car is one with a middle engine and rear wheel drive. The nose of the car is light, which means that the steering is very sensitive, responding to the lightest touch. On top of that, the engine, being placed toward the middle of the car, means that the weight is displaced over the rear wheels, and this provides greater power on the road. Also, even if you brake hard, the MR car will not skew out of control. As a sports car the MR is undoubtedly the most suitable for the job, but the reality is that they are difficult to drive.

First of all you have to make sure the car is properly balanced, and whilst it is excellent for driving to the very limits when cornering, this car is very unforgiving of a driver's mistakes. However, if you can drive well it can be superbly fast, and this is why the MR is undoubtedly the car of choice for the experts.

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4WD

4-wheel drive

Basic technique

As everyone knows, a car has four wheels. And no doubt you will agree that in order to get the most speed from a car, four wheels being driven by the engine is better than two. Taking the brakes as an example, years ago brakes were fitted either to the front wheels or to the back, but now all vehicles have brakes fitted to all four wheels. The 4WD car operates on the same principal, that 4 is better than two, especially when driving on snow, slippery ground or rough terrain. For this reason, the 4WD is rapidly becoming a popular vehicle for use on paved or dirt roads, and particularly for rallies, and more recently the 4WD sports car is being adopted for use on circuits and mountainous terrain too. The more powerful the engine, the more suitable it is to a 4WD car. However, the mechanism that transfers the power from the engine to each of the four wheels is extremely complex and the different wheel speeds required for cornering can be problematic for 4WD vehicles. It is particularly easy to under-steer in a 4WD car and this is certainly a problem for a sports car. However, recent developments in electronic technology have meant that the newer 4WD cars are a lot easier to handle. Therefore, taking its fantastic traction into account the 4WD is an extremely powerful sports car indeed. Especially in rain or other slippery conditions, the 4WD is much safer than its 2-wheel drive counterparts, and even leaves the powerful MR standing.

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Perhaps the most important part of any sports car is its tyres. The tyres are the things that connect the car directly to the road surface and propel the car along the road, so if they are not up to the job it doesn't matter how powerful the engine or how hard the suspension of the car.

Every movement on the road (be it accelerating, decelerating or turning) is controlled by the grip of the tyres on the road surface. The power of that grip can be represented by a graph (see diagram below). The vertical component of the graph represents acceleration and deceleration whilst the horizontal component represents turning left and right. There is a limit to the amount of grip a tyre has and exceeding that limit causes the tyre to slip. The area within the circle on the graph represents the grip limit of a tyre on the road, whilst the circumference of the circle itself represents the very edge of that grip limit. When a tyre begins to slip, as you probably know already, there is often a screeching or squealing sound. A gentle squeal is roughly indicative of when a tyre reaches the very limit of its grip capability on a road surface, but a loud, ear-splitting screech means that the grip limit has been exceeded.

Naturally it is important to be able to use your tyres to their limit in order to get the most speed from your car. To make the car brake as quickly as possible, you will need to be

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Basic technique

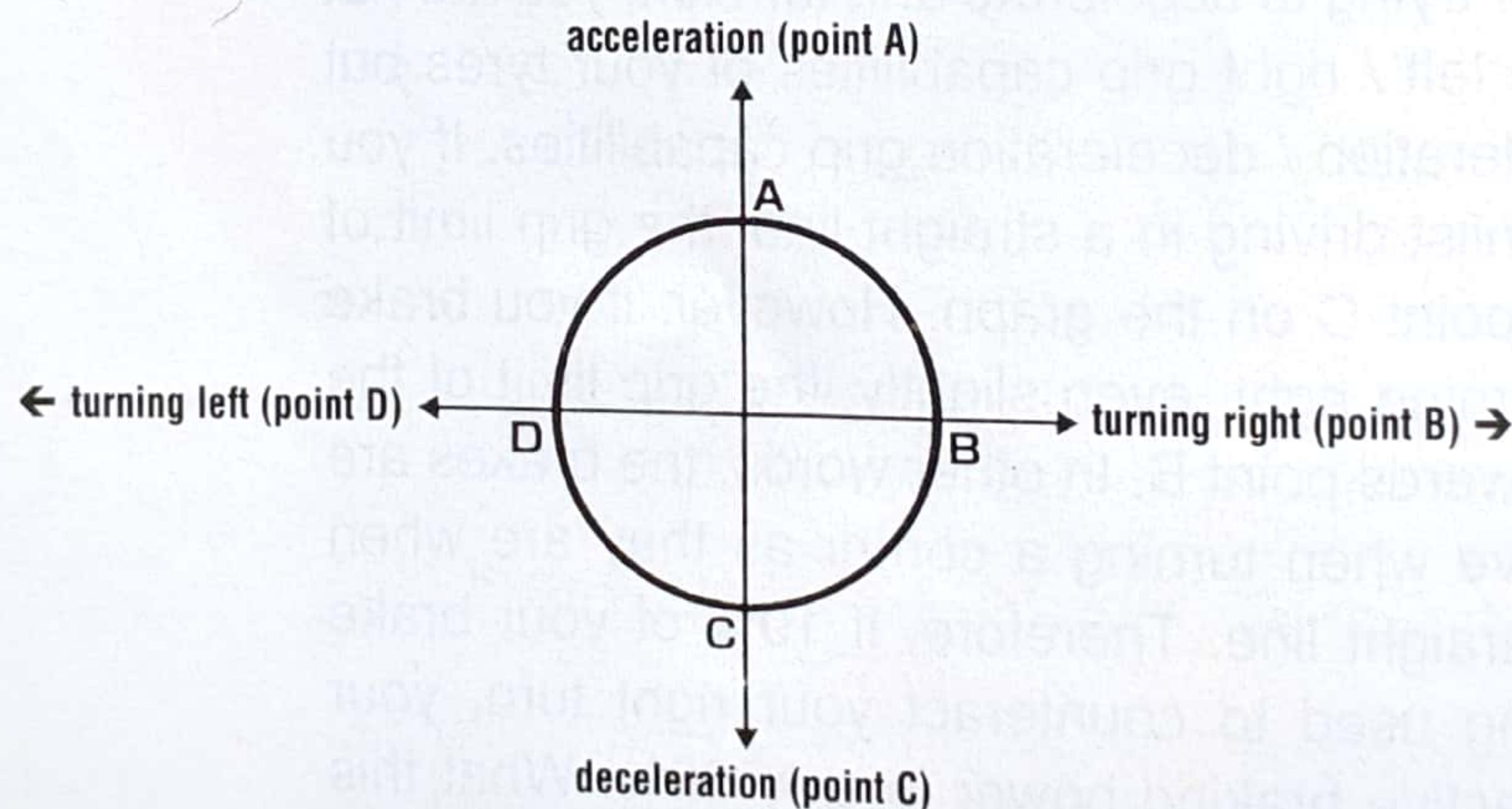
able to take the tyres right to their grip limit (point C on the graph). However, if you brake too hard (i.e., if you exceed point C on the graph), you will skid or the wheels will lock, you will lose control of your braking and your stopping distance will be greatly increased. In addition, if you exceed the grip limits when cornering (points B and D on the graph) you will lose control of the steering and may even spin out of control altogether.

The most difficult part to judge is the other areas within the circle on the graph besides the axis lines. The tyres are not there simply to enable you to speed up and slow down, or to turn left and right. If you are trying to brake whilst turning right or trying to accelerate and turn left, you are not just using the left / right grip capabilities of your tyres but also the acceleration / deceleration grip capabilities. If you brake hard whilst driving in a straight line, the grip limit of your tyres is point C on the graph. However, if you brake hard whilst turning right, even slightly, the grip limit of the tyres shifts towards point B. In other words, the brakes are not as effective when turning a corner as they are when driving in a straight line. Therefore, if 10% of your brake power is being used to counteract your right turn, your remaining effective braking power is only 90%. What this means is that in order to use 100% of your braking power

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none of that braking power should be wasted turning left or right. In effect this means that if you are braking whilst turning left or right, your braking should be slightly gentler than usual. The same thing is true of when you are accelerating and turning.

So, driving sports cars is not simply about accelerating, decelerating or turning left and right – it is a combination of all of these things. However in order to drive as fast as possible you need to be driving to the very limits all the time. This means that you should try your very best to drive the car to the edge of the limits on the graph circle.



Weight shifting

Basic technique

So now you understand the vital importance of making full use of your tyres' grip on the road and the fact that the grip limit is not the same in all cases: it is different according to the road conditions, the tyres themselves and the way they are used.

The simplest of these to understand is the road conditions: there is a huge difference in the vehicle's grip on the road when driving on a normal asphalt road and gravel road. Naturally the grip on the asphalt road is far greater than on the gravel. In other words the grip limits on the asphalt are much higher than on the gravel. Also, even on the same asphalt road there is a huge difference in the vehicle's grip on the road when the road surface is dry and when it is wet.

The tyres with the best grip of all are sports car tyres. The size of the tyres also affects their grip on the road: the wider the tyres, the more of the tyre surface touches the road, and the more of the tyre surface touching the road, the greater the tyre's grip on the road surface.

On top of that, the way you drive can also have a great effect on the grip power of your vehicle on the road, and this is known as weight shifting. It is quite obvious that it is the four tyres which support the weight of any vehicle on the road. For example, if the total weight of a particular

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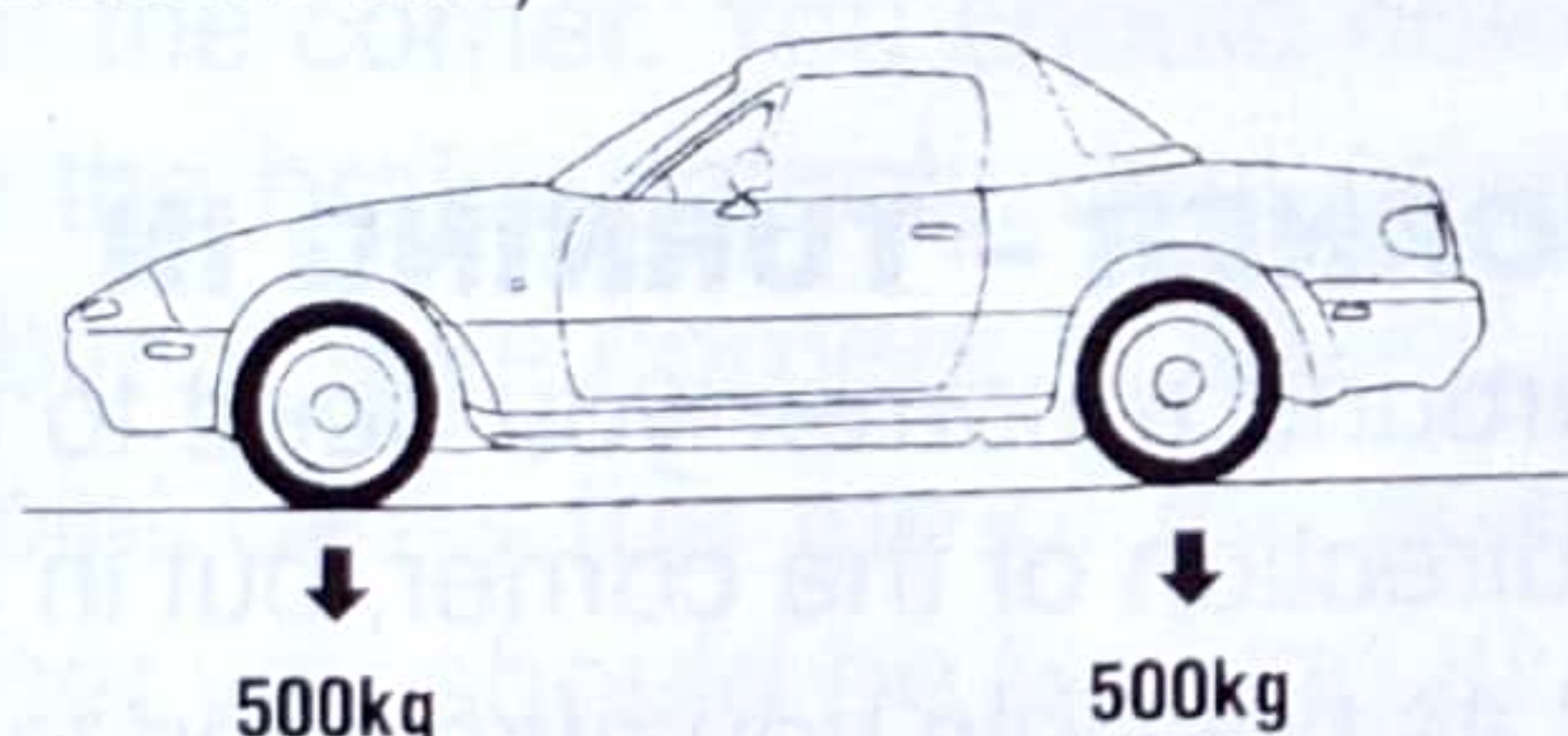
vehicle is 1000kg, each of the four tyres bears 250kg of that weight. However, this is only when the car is stationary. When the car begins to move the balance of the weight is displaced. For example, when viewed from the side, a stationary car is supported equally by all the tyres, but a car which is accelerating has the nose raised and the tail down, but when you apply the brake the car has its nose down and its tail raised. This is because the balance of the weight of the vehicle has shifted. When the car is stationary the front and rear wheels each support 500kg, but when it accelerates the weight balance is shifted to the rear so that the front tyres support 400kg whilst the rear tyres support 600kg. You can even experience this weight shift for yourself when riding in a car: when accelerating your back is pressed into the seat whereas when you brake you tend to fall forwards.

As you might expect, this weight shifting also has an effect on the tyres' grip on the road: basically, the more weight applied through a tyre, the greater its grip on the road surface. Again you can try it for yourself – using a pencil rubber try rubbing it lightly on a piece of paper and then try rubbing it hard. You will feel the difference in the friction (=grip) between the two. Therefore when a vehicle brakes, the 500kg on the front wheels becomes 600kg due to weight shifting, and this has the effect of increasing the grip

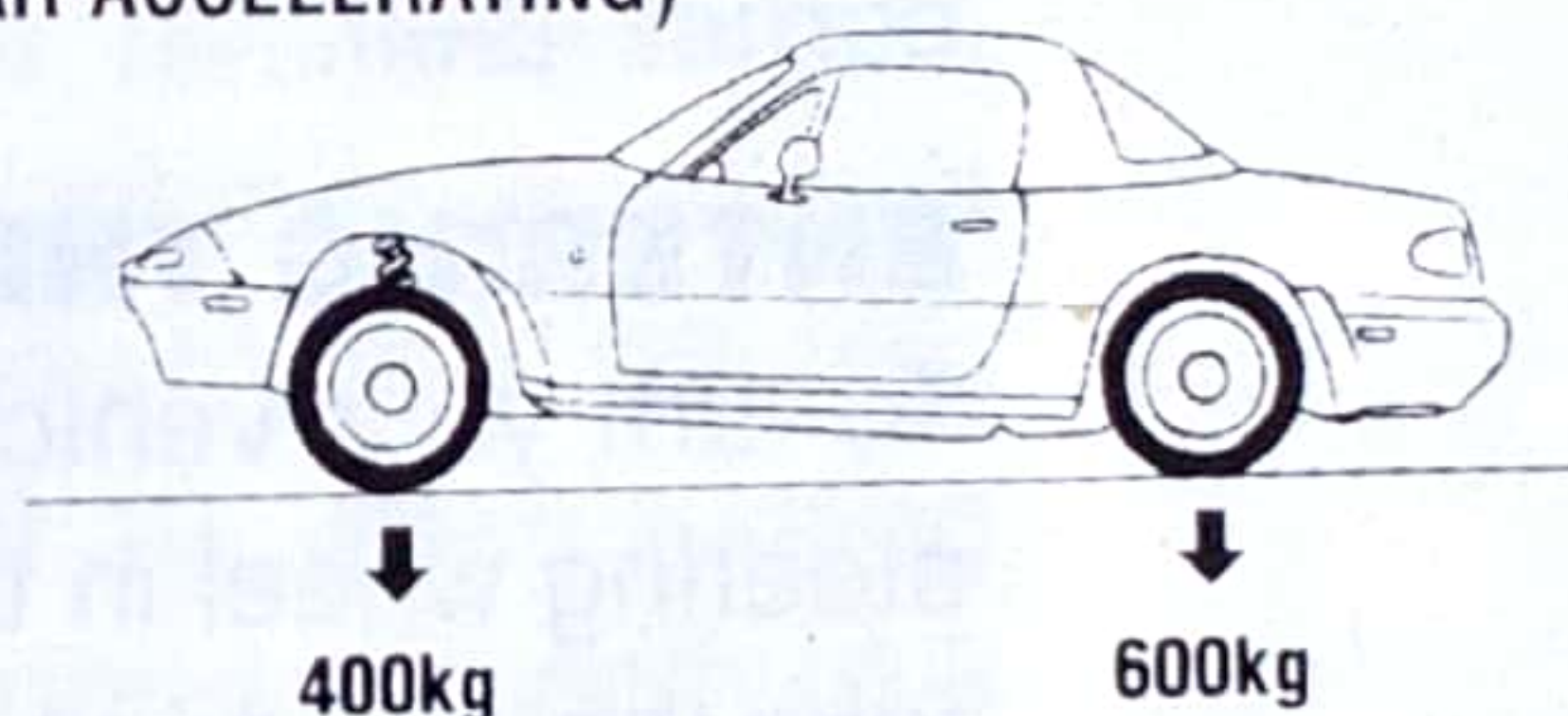
of the front tyres on the road surface. If we apply this to the graph we used previously (with regard to tyres), this has the effect of increasing the size of the circle bordering the grip limits of the tyres. Increasing the weight on the tyres from 500kg to 600kg (an increase of 20%) increases the area within the circle on the graph by 20%.

If you apply these ideas to your driving, you will soon be able to drive both quickly and steadily.

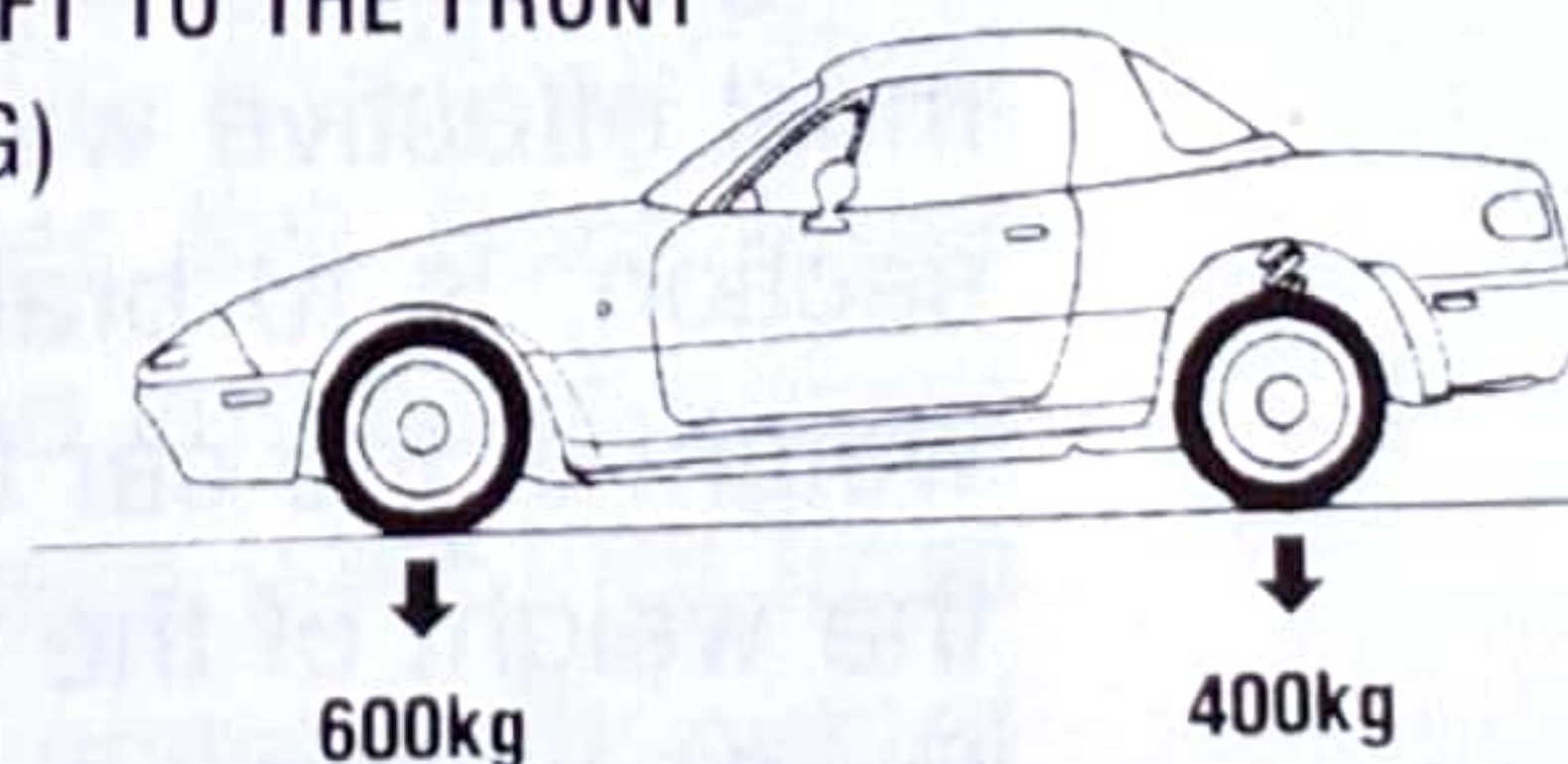
• EQUAL WEIGHT DISPLACEMENT
(STATIONARY CAR)



• WEIGHT SHIFT TO THE REAR
(CAR ACCELERATING)



• WEIGHT SHIFT TO THE FRONT
(CAR BRAKING)



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APPLICATION OF WEIGHT SHIFTING

The most important thing to learn when racing on a circuit is to be able to take corners at speed. The reason for this is that, when driving down the straight there is no particular technique you can use to help you win – just select the appropriate gear and keep your foot pressed down on the accelerator.

In order to take corners at speed you need to be able to make full use of weight shifting and use the tyres to their limit. Here we will explain in simple terms how to take a corner joining two straights as quickly as possible. First of all, from the road leading up to the corner to entering the corner itself.

ENTERING THE CORNER – TURNING IN

To turn your vehicle around a corner you need to turn the steering wheel in the direction of the corner, but in order to take the corner as fast as possible you also need to use the full grip capabilities of the tyres when turning the car. The most effective way to do this, as we discussed in the last section, is to brake hard in order to shift the balance of weight of the car from the back to the front so that more of the weight of the vehicle is displaced over the front tyres. In other words, you should brake into a corner. If you brake hard and then release the brake before turning the

steering wheel, the weight you transferred to the front tyres will be removed and the grip of the front tyres will therefore decrease. This is why you should brake into the corner, turning the steering wheel as you brake. The most difficult part of this is judging how hard to brake.

If you brake too hard when cornering, you will exceed the tyre grip limit (point C on the vertical graph axis) and you will therefore have no left / right grip with which to turn the corner. There is no quick and easy way around this – you just have to practise and learn from your mistakes. Perhaps the best advice is brake as hard as possible as you approach the corner, then ease off the brake slightly as you turn the corner. You should however, remember not to release the brake entirely. Just ease up slightly or you will be unable to take corners at speed. If you think of the grip limit (point C) as the top of the scale at 10, when turning the corner you should be braking at around a strength of 3 or 4 (although this may change depending on the situation). The reason for this is that the weight shifting effect of braking keeps the weight over the front tyres making for a better grip on the road. Once you have turned the corner sufficiently you can then release your foot from the brake pedal and you should then accelerate out of the corner.

Driving
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If your car starts spinning as you begin to turn the corner, this means that either you have too much weight transferred to the front wheels or you are travelling too fast to take the corner. If you find that you have too much weight transferred to the front of the car you should begin to ease up off the brake a little earlier, and if you are driving too fast you should try braking a little earlier.

ACCELERATING OUT OF CORNERS

If you have managed to negotiate the corner successfully, you should then accelerate away into the next straight as quickly as possible. Getting away quickly from a corner is the key – the faster you can begin to accelerate out of a corner determines how quickly you can take the corner. Therefore, as was explained earlier, the key points are using the weight shifting technique to its full advantage, and taking your car's braking capabilities to the limit.

Your car is very unstable as it enters a corner. Simply put, when cornering you are putting your car into a position in which it is much more likely to spin. This can clearly be seen from the previous example; the car will begin to spin if there is too much weight at the front of the car as it begins to turn the corner. Therefore the key point here is that you should try to stabilise the car and accelerate before it begins to spin. As a basic rule you should try to

start accelerating from the clipping point or just before the clipping point on the corner. The clipping point will be different depending on the size of the corner, but this will be discussed further under DRIVING LINES.

So what is the best way to stabilise a car which is on the point of spinning? Spinning occurs because the left / right grip limit of the rear wheels (horizontal axis on the graph) has been exceeded, so you have to increase the gripping power of the rear wheels. In order to do that you need to transfer weight to the rear of the car by accelerating. In other words, you should accelerate out of a spin to stabilise your car. However, here again the difficult problem is the degree of correction you should take, and this will be different depending on whether the car is front or rear driven. If for example your car is rear drive and you accelerate too hard, you lose left / right grip power (horizontal on the graph) to the front wheels, you will be unable to control the direction of the car and you will go into a spin. You should therefore shift the weight to the rear more gradually in order to keep control of the steering. In other words, accelerate slightly to make use of weight shifting and to stabilise the car, then accelerate hard out of the corner when you have the car under control. This is the key to fast cornering.

Driving on the limit

Driving technique

Another reason behind failing to corner quickly is understeering: this is where you accelerate out of the corner too soon, before turning the corner properly. The result is that the corner is not taken on a good racing line but is taken too wide. In other words, whilst the car is reasonably stable (i.e., it will not go into a spin) there is still some leeway on the left / right grip limit of the tyres so the car is not being driven to its limits. Therefore, if you put your foot down on the accelerator you can accelerate out of the corner because you still have leeway on the vertical axis of the graph too. However, the gripping power on the front tyres is not very good when understeering because there is insufficient weight shifting to the front of the vehicle. Therefore even if you turn the steering wheel further into the corner, the car will not recover a tight line on the corner because the grip limits of the front tyres have been exceeded. If you experience understeering you need to turn your car more into the corner, so you need to brake longer than you would normally and turn the steering wheel further into the corner. If this does not rectify the situation, it means that you are going into the corner too slow, so if you increase your speed a little you should be able to turn more easily.

Basic technique

Now we will go on to cover front drive cars. In the case of FR cars, you do not need to worry about the vehicle spinning out of control even if you hit the accelerator suddenly. This is because the front wheels tend to lose some of their gripping power the more you accelerate in FR cars which means that the only real problem is understeering. Therefore, when you take a corner in an FR vehicle, the most important thing to bear in mind is to accelerate without understeering. As with rear drive cars, FR cars are unstable (trying to spin) when cornering, so you should stabilise the car by increasing your acceleration a little, thus reducing the left / right grip power of the front tyres. As you gradually return the steering wheel to a straighter line as you come out of the corner you should accelerate hard to make as much use as possible of the acceleration grip (vertical axis on the graph).

In summary, whether you are driving an FR or an FF car, the most basic rule to observe when cornering is to use both the gripping power of the car to its limits at all times whilst also balancing the vertical and horizontal components of the graph. In addition, when driving your car to its limits all the time, you also have to bear in mind the fact that it is very easy to exceed the grip capabilities of your tyres by accelerating or braking too hard or too quickly or by turning the steering wheel too hard.

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A SIMPLE CORNER

The most basic driving line is called the Out In Out. You may already have heard of this if you are interested in sports driving: it means taking the corner as wide as possible to take it as fast as possible. You take an outside line on your approach to the corner, an inside line on the corner, and an outside line on the way out of the corner. The innermost point on this driving line is called the clipping point (CP). As a rule, the CP should be as close as possible to the inside of road. If it is not, you are not taking the fastest driving line around the corner because it is not the shortest. If you find it difficult to get close to the inside of the road, you are likely to under-steer. Before entering a corner you need to decide the position of the CP, and be sure to hit it when you take your driving line around the corner.

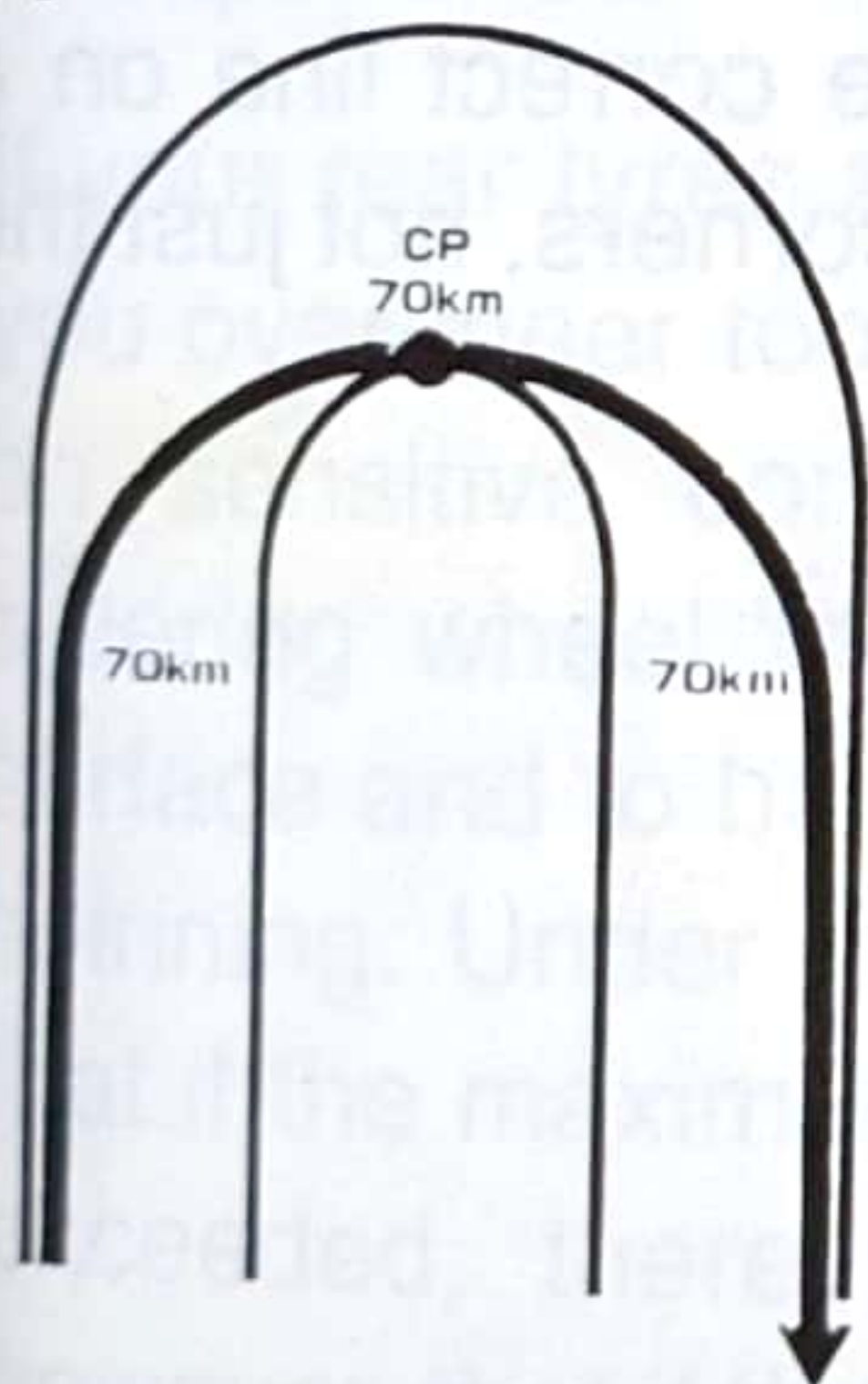
The wider you take the corner the faster you can drive around it. Taking diagram A as an example of a simple corner, the ideal cornering line would be a perfect curve, and if you want the fastest cornering line this is it. However, considering not just the cornering time but also the lap time, it is better to have a faster exit speed from the corner. A more practical driving line is shown in diagram B. The driving line shown in this diagram is slightly exaggerated, but it shows how you can increase the exit angle from the

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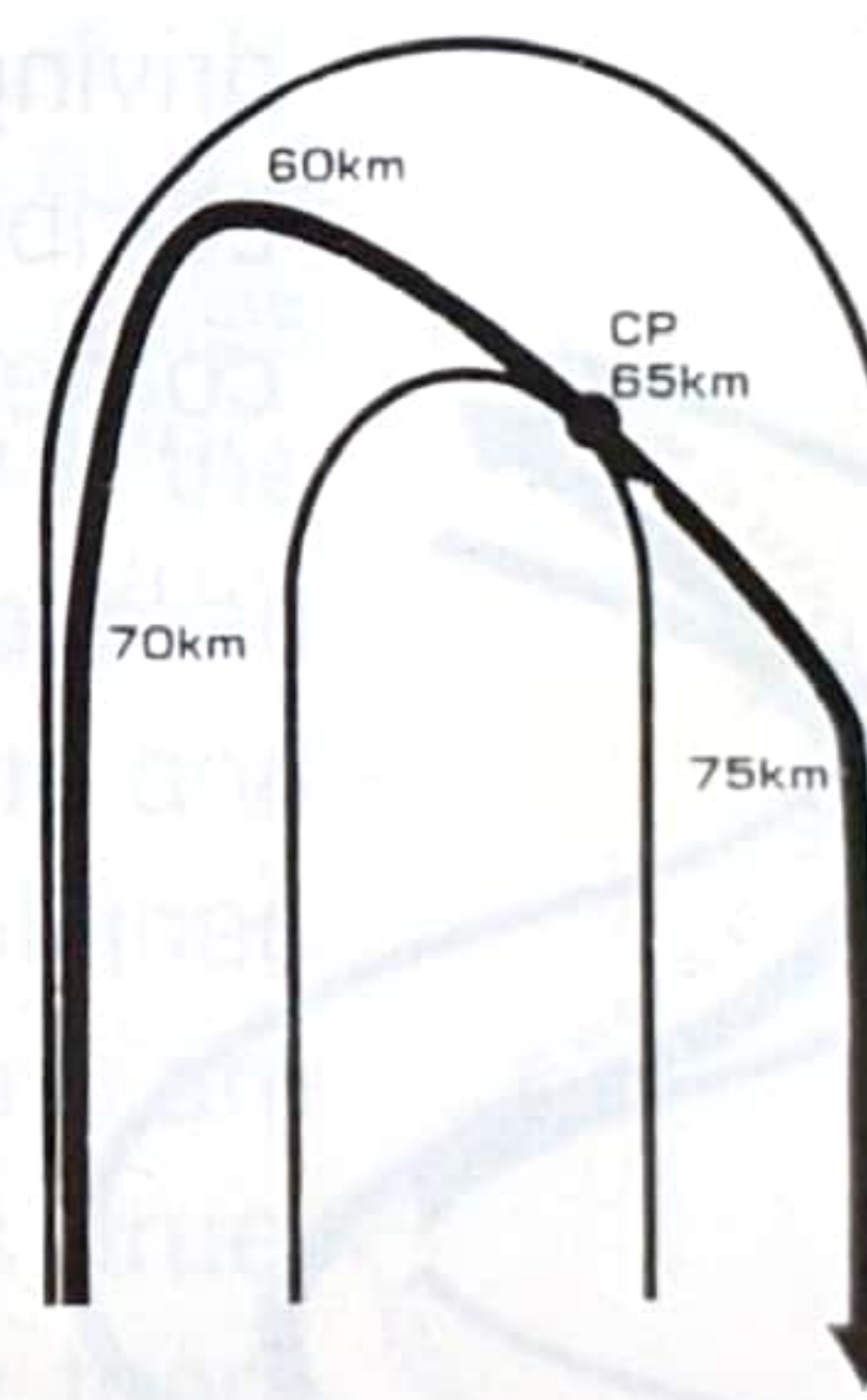
Basic technique

corner considerably by slowing down more on your approach and entering the corner at a sharper angle. If you can manage to take this sort of driving line, you can begin to accelerate out of the corner earlier and build up a higher speed exit speed than in diagram A. This type of cornering is called Slow In, Fast Out. This is also a popular sports driving term which you may already have come across. The CP on this driving line, whilst still on the inside of the corner, is more towards the second half of the corner, making the exit angle as large as possible.

A



B



Driving technique

S-BEND

The Slow In, Fast Out driving line is more effective on S-bends and combination corners. The solid line in the diagram shows the Slow In, Fast Out driving line, the best line for a fast exit from each corner, compared to the dotted line which shows the more standard Out In Out line. In this sort of combination corner the basic rule for which driving line to take is to choose whichever line gives you the fastest exit from the corner. In order to do that, you need to take the second corner from an outside position, which means that you cannot take the first corner early. When you come out of the first corner you need to keep to the left hand side of the road, so you cannot exit the first curve too quickly or you will not be able to keep to the driving line. The key point of taking the correct line on a combination corner is to visualise both corners, not just the corner ahead.



Driving technique

Advanced technique

The dynamic technique known as DRIFT, where your tyres slip on the road surface, is both exciting to watch and thrilling to experience. The basis of the technique is centred around weight shifting and using the tyres to their grip limits and beyond. If you want to drive as fast as possible, drift and fast cornering are both vitally important.

DRIFT

In order to drive around a course as fast as possible you need to have mastered weight shifting and you need to know the best way to use your tyres. The basic rules of DRIFT are the same as those for driving fast. It is a dynamic, ostentatious technique where your tyres slip on the road surface, and is both exciting to watch and thrilling to experience.

If your rear tyres are slipping you are over-steering, and if you over-steer too much you will go into a spin. Drift relies on sensitive control of both the accelerator and the steering wheel to keep the wheels slipping on the road surface and to balance the car between over-steering and spinning. Under the section about tyre grip we explained that if the maximum limit of vertical and horizontal grip are exceeded, there is a sudden drop in grip. It is true, however, that if the grip limit is exceeded only slightly, there is an area in which the driver can retain control of the

Advanced technique

vehicle without going into a spin. This cannot be given as a precise figure, but we can say that if you exceed the grip limit by only 1% or 2 % you will be fine, though if you exceed it by 5% or more it will be far more difficult to control the vehicle. In this area of control, the driver can adjust the vertical and horizontal grip levels by skilful use of the accelerator. In other words, a car that is being over-steered can be further over-steered or accelerated out of over-steering. The trick is to play the accelerator to keep the car tyres around the 100% grip limit, but sometimes a little under (98% - 99%) and sometimes a little over (101% - 102%). You will find that you can control your car's degree of over-steer if you have good control over weight shifting and the steering wheel. If you can master these things you will be a drift expert.

THE IMPORTANCE OF SLIPPING

In order to drift you need to be over-steering. If you cannot make the rear tyres slip you will not be able to start drifting in the first place. When you are learning the ropes, it would be ideal if you could practise somewhere big like a gymkhana to start with - somewhere where the road surface has a very low coefficient of friction such as a dirt road or a wet road on which it is easy to make tyres slip. In addition, you will be able to avoid doing too much damage to the car or the tyres in an environment such as this. Both

Advanced technique

FR and MR cars drift well, but MR cars are more difficult to control so we will deal with FR cars first.

The easiest way to make the rear tyres slip is to turn the steering wheel as far left or right as it will go whilst the car is stationary, rev the accelerator hard and then set off as fast as you can. This sends a lot of power to the rear tyres that the vertical grip limit is exceeded. Also, as the steering wheel is already turned, the horizontal grip limit is also exceeded and this has the effect of sending you in the opposite direction to the way the steering wheel is turned. This is the first step to creating a power overdrive, which is a technique used to exceed the tyre grip limits using acceleration. When this happens you will probably turn the steering wheel in the opposite direction automatically. When you have practised this a number of times you will begin to get a sense of when the rear tyres will begin to slip and how much they will slip so that you can learn to anticipate the movement in order to counter it successfully. This is relatively simple, so now we will move on to the next step.

When you have mastered over-steering the car from a stationary position, you can begin to practise over-steering the car when it is moving using the same method. Try at a slow speed to begin with – 10 km/h or 20 km/h is fine – turn

Advanced technique

the steering wheel and then accelerate hard. If you are driving a manual (MT) car, engage the clutch and increase the revs, then release the clutch suddenly to make the wheels spin. You are more likely to drift at higher speeds, but the faster you drive the less suitable this method is to start the wheels spinning. Therefore once you have mastered this slow speed drift method you should move on to the next section which assumes that you have already got a reasonable idea of the way over-steering and drift work.

SPIN TURNS

This stage assumes a certain level of driving knowledge and is therefore a little more difficult. So far we have been practising over-steering at slow speeds by accelerating quickly. Now we will discuss making spin turns using the hand-brake at higher speeds, reducing speed and cornering at the same time to create the over-steer. Ideally you should try to practise this technique around an object (something fairly forgiving which will not damage your car if you hit it by mistake).

You should start by practising 180—degree turns around the object. Accelerate towards the object, then when you are close enough, brake. This shifts the weight to the front of the car. You should then turn the steering wheel to start

Advanced technique

the car cornering, and when it begins to turn, pull the hand-brake hard to make the rear tyres slip. Pulling the hand-brake has the effect of locking the rear wheels and this exceeds the horizontal grip limits of the tyres, and this is what makes the tyres slip. In a manual car (MT) you will also need to depress the clutch pedal or the wheels will not lock – if they do lock and you haven't depressed the clutch, the engine will stall.

When the rear tyres begin to slip, you should release the clutch and accelerate at the same time to make the tyres spin more. After the car has spun through 180-degrees, you should then re-establish the tyres grip on the road and accelerate away again. However, this is not a precise science and it takes a lot of experience to be able to accurately judge the degree of spin necessary to accomplish spin turns correctly. You will need to practise until you can control the way the rear tyres spin.

If you cannot manage to make the rear tyres slip (i.e., you cannot get the rear wheels to lock) despite pulling on the hand-brake, either you have insufficient weight shifting or your timing is not quite right. You need to shift the weight to the front wheels properly (to lighten the load borne by the rear wheels) and pull the hand-brake when the car begins to turn. A car is a heavy object – even the 1600

Advanced technique

class cars are 1000kg in weight – so it takes time to turn it around. At first you may find yourself trying to rush the whole process, but once you are used to it you will probably notice that the series of actions is actually much slower than you might think. If you wait for the right moment to pull the hand-brake and prolong the time you leave the hand-brake on or increase your speed on entering the corner, you will be more likely to be successful.

When you cannot manage to make the wheels spin despite accelerating because your over-steering finishes too quickly, your problem is timing. You should press down on the accelerator after the car has turned sufficiently. If you find that you are under-steering, the problem is that the grip that you lost by over-steering has begun to return and your acceleration is pushing you forwards. The solution is to exceed the grip limits by accelerating more.

If your car goes into a spin you are really on the verge of success: all you have to do is make a slight adjust in order to be able to control the spin more. The key is to strike a balance between the grip lost through applying the hand-brake and the grip lost through acceleration, but once you have the knack you will find it easy to play one against the other and maintain that balance. By practising this over

Advanced technique

and over again, you will also learn how to operate the counter-steering necessary to prevent the car spinning out of control, and pretty soon you should be performing perfect spin turns around any object. And by applying your driving skills and control you will even be able to make 360-degree turns. In the next stage we will cover drift at higher speeds.

BRAKING DRIFT

Using the hand-brake to exceed the grip limits for the rear tyres is quite a drastic measure, and some drivers prefer another method known as shift lock. In shift lock you shift down a gear (say from 3rd to 2nd) without slowing first, releasing the clutch suddenly rather than feeding it in gradually to match the engine revs, and this has the effect of locking the wheels. It may be difficult to use this method for 180-degree turns around an object, but it is an easy method to use when cornering at high speeds or cornering in 2nd and 3rd gear. As you will see if you take a corner at high speed, the car will spin if you make even the slightest of mistakes – basically, the higher the speed, the easier it will be to make the rear wheels slip. You will also find that, even using the hand-brake, you can over-steer quite easily if you enter a corner in the right way.

It is easy to start drifting at high speeds. However, once

Advanced technique

your car starts to drift you will need fast reactions and skilful steering in order to control the drift using acceleration and counter-steering techniques. The higher the speed the more difficult it is to control drift. For that reason you should practise your turns around an object as much as possible.

Using braking drift without the hand-brake or shift lock is far more difficult, even at high speeds. The way to start the tyres slipping is to employ weight shifting as you enter the corner by braking, but you will need to go into the corner reasonably fast and shift the weight properly in order to get the tyres to slip in the first place. There is a knack to this: long, soft braking. As mentioned before, it takes time to move a heavy object like a car, and you shouldn't be in too much of a rush. If you shift the weight properly there will be less weight on the rear tyres and they will begin to slip due to centrifugal force. Then when they start to slip, accelerate harder than usual to keep them spinning. Taking the corner at speed, shift weight to the rear by accelerating, maintaining the state of drift using the steering and acceleration. It is like pushing forwards whilst slipping to the side at the same time. This is a powerful drift technique that you can maintain for quite some time if you have enough skill to adjust the acceleration and steering properly.

FEINT MOTION

When you are riding a bicycle and you want to turn left, you may find it easier to make the turn if you go right a little first to allow you to swing into the turn. This also applies to a car – turn right a little to shift weight to the right, then use the resulting power of the car rocking back the other way as it stabilises to help you round a left hand corner. This technique is known as feint motion, and can be used quite easily even when driving quickly, on an S-bend for example. This is a very popular technique in rallying where the coefficient of friction of the road surface is very low, making it difficult to get the tyres to grip well, and is also very effective in drifting. We recommend you try using it when attempting to drift at higher speeds (rather than using the hand-brake or shift lock techniques) where braking drift would not be so effective. Throw the car right, then as it begins to swing back, thrust it towards the left. If you apply this when you are driving along a straight road, you can maintain drift by swinging repeatedly from one side to the other, and maintain a straight line drift.

If you practise enough you will be able to combine some of these techniques to maintain drift. Your next challenge is to learn how to impress the spectators: driving as fast as possible and drifting at the same time.

INERTIA DRIFT – THE ULTIMATE IN EXCITEMENT

If you have mastered drifting using braking or feint motion, you should be at the stage where your drift technique is fairly advanced. A couple of the exciting things you can use to show off to impress the gallery are to counter drift or maintain drift for a prolonged period. However, if you can master inertia drift you can really begin to excite the crowd. In inertia drift your car travels too fast for the tyres to grip on the corners, and you have to control it as it slides sideways. You need to maintain your speed on the corners, controlling the drift by counter-steering and accelerating hard to move forward. If you can manage to achieve it, you will find that inertia drift is the ideal cornering method. In other words, inertia drift is the ultimate in driving, the fastest, and the most beautiful to watch. It is an exciting combination of ostentation and speed.

In order to achieve inertia drift you should drive towards the corner as fast as possible, faster than you would normally. If you find you are under-steering you should begin to turn the car a little early, then accelerate beyond the tyre grip limit and increase speed at the corner. Be careful not to over-steer by accelerating too hard, and feed the car round the corner using the steering wheel and the accelerator. Keep accelerating and counter-steering, pushing the car

forwards at breakneck speed, and slide the car beautifully around the corner. Inertia drift can only be made at very high speeds so you need to be well prepared. You need to be looking ahead as far as you can, somewhere around the exit of the corner, and you need to have the skill and the confidence to control the car whatever happens. In order to acquire this skill and confidence you will need to practise regularly on a daily basis, building up your skill as you go.

Now perhaps you understand what drift is really all about – cornering at high speeds. If you can drive fast, you can learn to be a real drift master. But if you cannot drift, you can never drive really fast...

UNDER AND OVER

Under-steering is when you cannot get the car to turn in the direction you wish to go however much you turn the steering wheel that way, whilst over-steering is when your car turns more than you want it to (in other words, almost spinning). The best state to be in is between the two, neither over-steering nor under-steering, and basically, if you can maintain this state, you will find that it is the fastest way to take corners. Here we would like to explain why

Advanced technique

over-steering and under-steering occur and how to tackle them when they do.

FREQUENTLY ASKED QUESTIONS

1. I have heard that a good driver can take corners at 60 km/h. I have tried going into corners at 60 km/h too but I never make the corner. I am driving the same car, so why can I not turn the corner? What am I doing wrong?

You probably haven't managed to shift weight properly. When you brake, your car leans forwards and the weight shifts to the front. The grip of the front tyres therefore increases, and if you turn the steering wheel at that point, you will be able to make the turn. As mentioned earlier, depending on the weight displacement of the car, the turning ability is very different, even if the speed remains the same.

If you find that you cannot make a turn, the safest thing to do is to calm down and take your feet off both the brake and the accelerator. Then, when the grip begins to return to the front tyres, the car should begin to turn.

Advanced technique

2. I was told that I should turn the steering wheel whilst pressing the brake, but if I do that my car doesn't turn.

Unlike the first example, although you are braking when turning the steering wheel (which is good), the reason that you cannot turn the car is that you are under-steering. This is because you are braking too hard when you turn the steering wheel. In other words, you are using the vertical grip of the tyres too much, and this means that you cannot utilise the horizontal grip you need to get around the corner. Lighten up on the brake a little when you turn the steering wheel. The reason why this problem is occurring in the first place is that you are going into the corner too fast. Try relaxing a bit more, and start braking a little earlier – you'll probably find that you can make it if you do.

Under-steering occurs when you go into a corner too quickly. The best thing to do is to release the brake: if you keep braking, the tyres will lock and the car will just move forwards. It may be frightening at first to try this, but you will need to be brave and release the brake in order to regain enough grip power on the front tyres to take you around the corner. If you do this, the car will begin to turn instead of travelling forwards. If you are in an FR car, the locked wheels may not release so easily because when the wheels lock the engine stalls. If this happens to you, you need to press the clutch down and release it again to re-start the engine, thus releasing the wheel lock. However, if you are driving on a wet road

Advanced technique

this may not be enough – try depressing the clutch and re-starting the engine by turning the ignition key.

3. When I try to exit a corner and press down on the accelerator, the car starts to move out to the side, travelling sideways rather than going in the direction I want it to.

We discussed this problem under the cornering section, but we will cover it again here. What you are experiencing is under-steering. This occurs when you accelerate, so regardless of whether you are in an FR or an RR car you can solve the problem by releasing the accelerator. The reason for this is that releasing the accelerator shifts weight to the front of the car, and this gives you more grip on the front tyres. However, if you release the accelerator too quickly, the rear tyres may lose so much grip that they begin to spin, so you have to exercise a certain amount of control.

4. I don't know why, but I cannot seem to turn the car properly, I cannot even get close to the CP, and I don't feel the tyres slipping at all.

This is a simple problem - if you cannot make a turn even though the tyre grip limit has not been reached, you are simply not turning the steering wheel enough. This tends to happen a lot to beginners, usually because they are frightened of turning the steering wheel or too nervous to hold it properly. First of all you need to calm down, then be aware of your driving position.

5. I started spinning when I went into a corner...

This is over-steering. You haven't shifted weight properly before cornering. One measure to rectify this is to counter-steer – turning the steering wheel in the opposite direction to the way you wish to go. In over-steering the rear wheels are attempting to travel beyond the front wheels, so you need to move the front wheels forward using the steering wheel. It is instinctive to turn the steering wheel the opposite way when over-steering occurs, but you need to practise in order to perform this manoeuvre quickly or you will be unable to counter-steer effectively. However, you should be aware that as soon as the grip of the rear tyres recovers, the car goes in the opposite direction, and it does so very rapidly making it difficult to correct the direction of travel of the car. This is something that you will need to learn from experience. The important thing to learn is to counter-steer quickly and then return the steering wheel to its normal position as soon as you feel the grip of the rear tyres returning.

You also need to work the accelerator whilst you are counter-steering. You need to press down on the accelerator to shift weight to the rear of the vehicle because the grip on the rear tyres is insufficient (which is why the over-steering has occurred in the first place). However, as mentioned before, if you use accelerate too much in an RR car you will exceed the grip limit of the rear tyres, so you need to accelerate gently to avoid this. If you are in an FR

car, on the other hand, you should accelerate hard to recover the grip.

6. When I am driving around a long corner, the rear tyres begin to slip...

Unless you are driving an RR car and pressing down on the acceleration too much, you must be trying to take the corner too fast. If you do this, the tyres will not be able to bear the centrifugal force and the car will slip sideways. You are very close to mastering the problem of cornering, and a little bit of counter-steering will show a dramatic improvement. If you take too much time before counter-steering or you start spinning, you are obviously driving too fast, so you should try to reduce your speed a little. The solution to this problem is the same as for No.5 above. The thing you should try to avoid most is feeling rushed and releasing the accelerator too quickly. If you do you will find that you lose weight to the rear of the car and the rear tyres start spinning.

PARTS GUIDE

• MUFFLER & AIR CLEANER

SPORTS MUFFLER & AIR CLEANER

This is a set made up of a basic shaped air cleaner and a muffler for sports driving that improves the efficiency of the exhaust. This is well-suited for use with turbo engines, so it is ideal for use by those people who are beginners in the field of turbo tuning. With a natural inhalation engine, if the engine revs are low this has the effect of reducing the torque, but it has the effect of increasing the torque if the revs are high.

SEMI-RACING MUFFLER & AIR CLEANER

This is a combination of a racing air cleaner (the filter of which is made from urethane sponge) and a low-resistance exhaust muffler which improves the efficiency of the engine at high revs. This is particularly suitable for cars with turbo engines that produce a lot of exhaust fumes. With a natural inhalation engine the engine should be tuned.

RACING MUFFLER & AIR CLEANER

This set is made up of a racing air cleaner (with an air funnel which improves the inhalation efficiency far more than the semi-racing version) and a high-efficiency, straight, racing car muffler

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(specifically designed for use with high revs). This is particularly suitable for high-power cars with highly-tuned engines. Also, as it reduces the torque at low revs, it is better suited for use with particular engines and gear ratios.

• BRAKES

“SPORTS BRAKE KIT”

These are carbon metallic brake pads that give very stable stopping power over a long period. They are far more responsive than normal brake pads and their braking power doesn't fade the longer you brake, so they are particularly well-suited to the longer races.

“BRAKE BALANCE CONTROLLER”

This is a special part that adjusts the front and rear braking power balance by controlling the anti-lock braking system. If you use the front brakes more, the car will tend to under-steer, whereas if you use the rear brakes more, the car will tend to over-steer and will have a tendency to spin out.

• COMPUTER

“SPORTS ROM”

This is the most basic form of tuning. Making adjustments to the engine management system program makes the engine more powerful by automatically adjusting the ignition timing and the rate of fuel consumption. With turbo engine cars, if you change the air cleaner and muffler set, beginners can use this method of tuning.

• NA TUNING

NA TUNE I

This tuning makes natural inhalation engines more powerful by adjusting the ignition timing and the valve timing, and by increasing the pressure rate by using an extremely thin gasket. At the same time it changes the exhaust manifold and improves peak power without altering low rev torque.

NA TUNE II

This tuning not only increases the pressure rate by polishing the head and the high comp pistons, but also changes the cam and adds a fortified valve spring with the aim of increasing revs and power output more than in Stage I. At low speeds the torque will decrease a little, but at high revs the power will increase. It also resets the engine management computer according to the required specifications.

NA TUNE III

In addition to effect of Stage II, this tuning makes the valve operation very light and also alters the pistons, the cam, the valves, the con-rods and the springs so that they work at peak performance even when the revs are high. The cam is changed to the racing type of cam, which has high lift and wide valve overlap. The pressure rate is increased up to the ultimate level but it is focussed on maximising the power so that the power band is in the mid-to-high rev range only.

- **“PORT GRINDING”**

By polishing the inside of the inhalation & exhalation ports (the air ducts), the ventilation resistance decreases and the response of the engine increases. The power increase itself is not so great, but this is a necessary tuning process for all NA engines.

- **INCREASING DISPLACEMENT**

This tuning increases exhaust output by enlarging the bore of the engine cylinders and increasing the con-rod / crank shaft stroke rate. Increasing the exhaust output makes it possible to increase the torque throughout the rev range.

- **ENGINE BALANCING**

FULL BALANCE TUNE

This decreases engine friction (by precise tuning of things like the piston weighting, the high-precision full-balanced crank shaft and the con-rod weighting), which increases the engine power and the rev count. In addition, it resets the rev limiter.

- **GEARBOX**

CLOSE GEARING

Close transmission shifts the ratio of the 1st - 5th gears closer together. This assembly replaces the normal transmission and

makes it easier to maintain the power band on a number of different types of corners. We recommend this transmission, particularly for natural inhalation engines.

SEMI RACING GEARBOX

The gear ratio of the Semi Racing Gearbox is even closer than that of the close transmission. It is ideal for hard tuning cars that have a narrow power band, but you need to be careful because you need to shift gears more often when using this transmission. You also need to consider the fact that there is a certain amount of loss when shifting up, and this may have a reverse effect in high torque engines.

FULLY CUSTOMISED SERVICE

This is a special transmission made for racing. With this you can alter all of the gear ratios and fine tune them depending on the use of the car and the features of the circuit you will be driving on.

• CLUTCH

HIGH CAPACITY SINGLE PLATE CLUTCH

You will feel the difference when you change gear with this clutch. Compared to a normal clutch, when you change up with this clutch you will be able to feel the direct connection.

TWIN PLATE CLUTCH

This clutch kit uses two clutch plates and is designed especially for racing. It responds well with big torque, big power machines. Clutch slipping is drastically reduced when you shift up with the twin plate

clutch and this makes for much better acceleration

TRIPLE PLATE CLUTCH

This clutch plate has three clutch plates. It improves the torque transfer capacity and the direct feeling between you and the car. It is most suitable for cars with hard engine tuning.

• FLY WHEEL

LIGHTWEIGHT FLY WHEEL

This fly wheel is light because it is made of chrome molybdenum steel. It lightens the engine's exhaust output. With this fly wheel the acceleration power improves a little, but the downside is that you can lose speed when going up hill if the torque is low.

SEMI-RACING FLY WHEEL

This fly wheel is lighter than the sports type because it is specially made for racing. It sharpens the engine's exhaust output. With this fly wheel too the acceleration power improves a little, but again the downside is that you can lose speed when going up hill if the torque is low.

RACING FLY WHEEL

This is an extremely light fly wheel which is only for use when racing. Both the engine's exhaust output and the rev count loss is sharpened with this fly wheel. The acceleration and deceleration power will improve, but as with the other fly wheels, you can lose speed when going up hill if the torque is low.

• PROPELLOR SHAFT

CARBON PROPELLOR SHAFT

This is a light propeller shaft made from carbon composite. The propeller shaft is placed between the differential gear and the engine so it affects the acceleration as much as the fly wheel. It improves acceleration power.

• INTER-COOLER

SPORTS INTER-COOLER

This is an air-cooled inter-cooler to cool down inhaled air, the temperature of which rises after being pressurised by the turbo. Even though the excess pressure may be the same as normal, the temperature of the inhaled air decreases. This has the effect of reducing the volume of the inhaled air, which in turn increases the power output of the engine. This is a must for cars with turbo engines.

RACING HIGH CAPACITY INTER-COOLER

This inter-cooler decreases the inhaled air temperature of the engine, which in turn increases the power of the engine by decreasing the temperature of the air inhaled. The bigger the volume of air, the better the temperature is decreased, but the engine response is weakened slightly. This is particularly suitable for engines with high excess pressure.

• TURBO KIT

TURBINE KIT I

This turbine kit makes the best use of engine power in the high rev range without sacrificing torque at the low-mid speed range by using a high-flow, compact turbine. This is a well-balanced turbine, which is suitable for use on any kind of circuit. Its main characteristics are that it reduces turbo lag, has a high response rate. In order to fit in properly with this turbine, the durable parts such as metal gaskets, oil coolers and fortified oil pumps are also supplied.

TURBINE KIT II

This turbine kit puts emphasis on peak power at high revs and balance at the low-mid speed range. The torque at the low speed range is lower compared to KIT I, but this turbine gives more power at the mid-speed range and above. Upgraded metal gaskets, oil coolers and fortified oil pumps, the fuel pump, injector and computer are also supplied when using this turbine.

TURBINE KIT III

This turbine kit emphasises peak power and focuses on the first 0-400 metre acceleration range. The power band is more in the high-rev range than KIT II, and using this turbine with close gearing is particularly effective. To make the best use of this turbine's special features, the cam should be exchanged at the same time. As with KIT II, upgraded metal gaskets, oil coolers and fortified oil pumps, the fuel pump, injector and computer are also supplied when using this turbine.

TURBINE KIT IV

This is a large turbine for high-rev and high-power output, which is designed for use at maximum power and is most suitable for driving at very high speeds. To make the best use of this turbine's special features, the cam should be exchanged at the same time. As with KIT II and KIT III above, upgraded metal gaskets, oil coolers and fortified oil pumps, the fuel pump, injector and computer are also supplied when using this turbine.

• SUSPENSION

SPORTS SUSPENSION KIT

This is a multi-environment suspension kit, which can be used anywhere from the street to the racing circuit, and is easy for even beginners to use. The shock absorbers (dampers) have three levels of adjustment depending on the terrain, and the camber angle is also adjustable. This is a multi-cylinder, low-pressure, gas shock absorber kit with 3 adjustable levels.

SEMI-RACING SUSPENSION KIT

This suspension kit is designed for use by more advanced drivers and allows you to adjust the height of the vehicle. Compared to the ordinary sports suspension, the suspension and spring rate are set to hard. The car height is adjustable (in millimetres) at both the front and the rear. The shock absorbers (dampers) have five levels of adjustment depending on the terrain, and the camber angle is also adjustable. This is a single-cylinder, high-pressure, gas shock

absorber kit with 5 adjustable levels.

RACING SUPPORT

This is for use only when racing. You can adjust not only the height of the car and the level of the suspension, but also change the spring rate freely too.

• STABILISER

STREET STRENGTHENED STABILISER (SOFT)

These stabilisers help counteract the vehicles' pitch and roll, and enable you to control one independently of the other. If you learn how to use the stabilisers properly, you can reduce the amount of left-right weight shift without affecting the front-rear weight shift balance. You should purchase the front and rear stabilisers separately.

RACING STABILISER (MEDIUM)

This is a torsion bar spring, which controls the roll of the car. By raising the spring rate of the suspension and hardening the suspension, the left-right roll is decreased but the front-rear pitching is also decreased making it difficult to shift weight when you use the brake. The stabiliser is a spring that affects the left-right roll of a vehicle. The rate of these stabilisers is set harder than that for the soft stabilisers above.

RACING STABILISER (HARD)

This is a hard specification product, the highest rate of the stabiliser line-up here. However, it is not necessarily the case that

the faster the suspension the faster the car: you need to choose something suitable for your driving style.

• TYRES

SOFT / SOFT

Each set contains four tyres. Both front and rear tyres in this set are made from a high-grip soft compound. This material grips well, but is not so durable as some other materials, so it is probably most suitable for sprint races.

HARD / HARD

Each set contains four tyres. Both the front and rear tyres are made from a hard compound. This material does not grip as well as the soft compound, but it is more durable and is therefore more suitable for longer races.

HARD / SOFT

Each set contains hard tyres for the front and soft tyres for the rear. Because the grip of the rear tyres is better than the grip of the front tyres, the front has more of a tendency to slip than the rear. This means that vehicles with this tyre combination will tend to under-steer. This is the most effective combination for improving the balance of rear-drive machines with lots of power which tend to over-steer.

SOFT / HARD

Each set of tyres contains soft tyres for the front and hard tyres for the rear. The grip of the front tyres is better than that of the rear, so

the front of the vehicle holds the road better than the rear, resulting in a tendency to over-steer. This is the most effective tyre combination for FF cars which tend to under-steer.

NOTE: Frictional wear and tear occurs only in long races and 2-player races. You can alter the settings for 2-player races in OPTIONS.

• RACE CUSTOMISATION

WEIGHT REDUCTION

To lighten the car, unnecessary parts are discarded and the materials from which the vehicle is made are changed. This has a number of merits, including increasing the acceleration power, increasing cornering capacity, increasing braking power and increasing the endurance of the tyres.

RACING MODIFICATION

This is a modification plan for a perfect race specification including altering the machine structure and the materials that the vehicle is made from. Under this plan, the car is lightened drastically (which is usually impossible with normal tuning), the width of the tyre tread is altered and the fenders are enlarged for use with large diameter tyres, but you cannot alter the tuning.

Full over

None

B

A

A

IA

B

B

B

B

A

A

A

A

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IA

IA

IA

IA

A normal car refers to a car which can be bought on the open market which has not been modified in any way.

Race list

Type	Grand Prix Cup	Licence required
Spot Race		None
GT League		B
	"Clubman Cup"	A
	"Gran Turismo Cup"	A
	"Gran Turismo World Cup"	IA
Special Events	"FF Challenge"	B
	"FR Challenge"	
	"4WD Challenge"	B
	"Light Weight Sports Challenge"	B
	"UK v Japan"	A
	"US v Japan"	A
	"UK v US"	A
	"Mega-Speed Cup"	A
	"Normal Car Cup"	A
	"Tuned Car Cup"	IA
	"Grand Valley 300"	IA
	"All Nite I"	IA
	"All Nite II"	IA

¹ A normal car refers to a car which can be bought on the open market which has not been tuned or altered in any way.

GT Race Difficulty

Difficulty	Vehicles allowed to take part			Other Restrictions
	Normal Car ¹	Tuned Car ²	Racing Car ³	
Novice	✓	✓	✓	None
Novice	✓	✓	✓	None
Advanced	✓	✓	✓	None
Advanced	✓	✓	✓	None
Expert	✓	✓	✓	None
Advanced	✓	✓	✓	FF Machines Only
Advanced	✓	✓	✓	FR Machines Only
Advanced	✓	✓	✓	4WD Machines Only
Advanced	✓	✓	✓	See Table Below
Expert	✓	✓	✓	Japanese and British Cars Only
Expert	✓	✓	✓	Japanese and American Cars Only
Expert	✓	✓	✓	British and American Cars Only
Expert	✓	✓	✓	None
Pro	✓	✗	✗	None
Pro	✓	✓	✗	None
Pro	✓	✓	✓	None
Pro	✓	✓	✓	None
Pro	✓	✓	✗	None

² A tuned car refers to a car which has one or more tuned / altered parts.

³ A racing car refers to a car which has been modified at a tuning shop specifically for racing purposes.

* VEHICLE TYPES ALLOWED IN THE LIGHT-WEIGHT SPORTS CHALLENGE

• STARLET	GRAND TOUR V
• COROLLA LEVIN	BZG
• SPRINTER TORRAINNO	BZG
• AE86 COROLLA LEVIN	GT-APEX
• AE86 SPRINTER TORRAINNO	GT-APEX
• FTO '94	GR
• FTO '94	GPX
• FTO	GPX
• CR-X DELSOL '92	VXI
• CR-X DELSOL '92	SIR
• CR-X DELSOL	VGI
• CR-X DELSOL	SIR
• EG CIVIC '93	SI-R II
• EG CIVIC '93	FERIO SI-R
• CR-X EF-8	SI-R
• EUNOS ROADSTAR '89	NORMAL

- FTO GP VERSION R
- MIRAGE ASTI RX
- MIRAGE '92 CYBORG R
- INTEGRA SIR-G
- INTEGRA TYPE R
- EK CIVIC FERIO SI II
- EK CIVIC SIR-II
- EK CIVIC TYPE R
- EUNOS ROADSTAR '90 V-SPECIAL
- EUNOS ROADSTAR '92 S-SPECIAL
- EUNOS ROADSTAR NORMAL
- EUNOS ROADSTAR V-SPECIAL
- EUNOS ROADSTAR S-SPECIAL
- DEMIO GL-X
- DEMIO GL
- DEMIO LX G PACKAGE

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Product Manager (Europe)
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Manual Design
Print Production Co-ordination
Manual Approval Supervisor
Manual Approval Testers

QA Manager
Head of Internal Development Testing
Internal Development Lead Tester
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Localisation Testers

Internal Development Testers

Assistant QA Manager
QA Supervisors
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Testers

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Special thanks to:

Sean Kelly
Jason Falk
Birgit Zich
Jim Sangster
Root Associates/Nadim Othman
Photography by Pumpkin

Wace Creative Imaging
Rebecca Savage, Chris Gorman

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Miles from Polygram/Island Records and Miller at Sony Music. Martin Root. Simon Roberts (SCEE). Frank & Fraser at Parlour Wood. All at Obscura. Ben Samuelson at TVR. Carol Miles of Bridgestone Tyres. Ed Bugg at Wace.

MUSIC CREDITS

MANIC STREET PREACHERS:

"Everything Must Go"
(Chemical Brothers remix)
Writers: Bradfield/Moore/Wire
Publisher: Sony Music Publishing

Manic Street Preachers track licensed courtesy of Epic Records/Sony Music Entertainment (UK) Ltd.

ASH:

"Lose Control"
Writers: Hamilton/Wheeler
Published by Island Records Ltd.

Ash Recording © Mushroom Recordings International BV

GARBAGE:

"As Heaven is Wide"
Writers: Vig/Erikson/Marker/Manson
Published by Rondor

Garbage Recording © Mushroom Records (UK) Ltd.

CUBANATE:

"Oxyacetalene"
Writers: Heal/Barry
Published by Polygram

"Skeletal"
Writers: Heal/Barry
Published by Polygram

"Autonomy"
Writers: Heal Raynor
Published by Polygram

"Industry"
Writers: Heal
Published by Polygram

All Cubanate Recordings © Modern Music Records GmbH

FEEDER:

"Shade"
Writers: Grant/Lee/Hirose
Published by Polygram

"Sweet 16"
Writers: Grant/Lee/Hirose
Published by Polygram

"Chicken on a Bone"
Writers: Grant/Lee/Hirose
Published by Polygram

"Tangerine"
Writers: Grant/Lee/Hirose
Published by Polygram

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Customer Service Numbers

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